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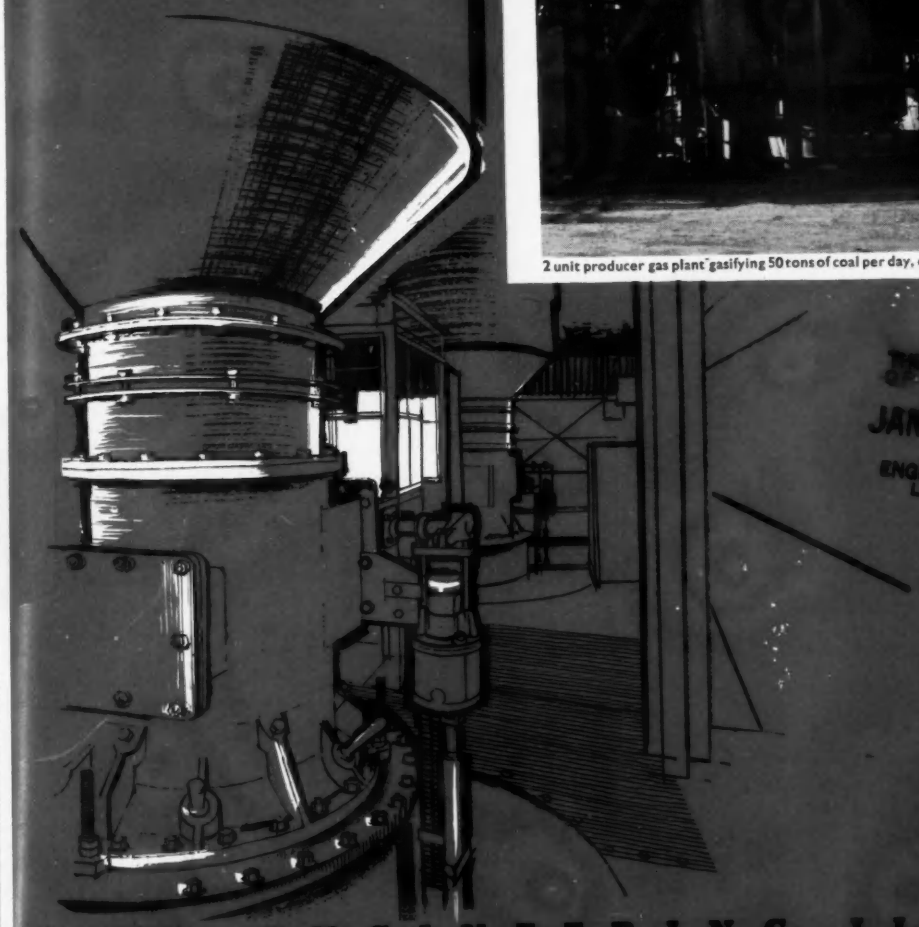

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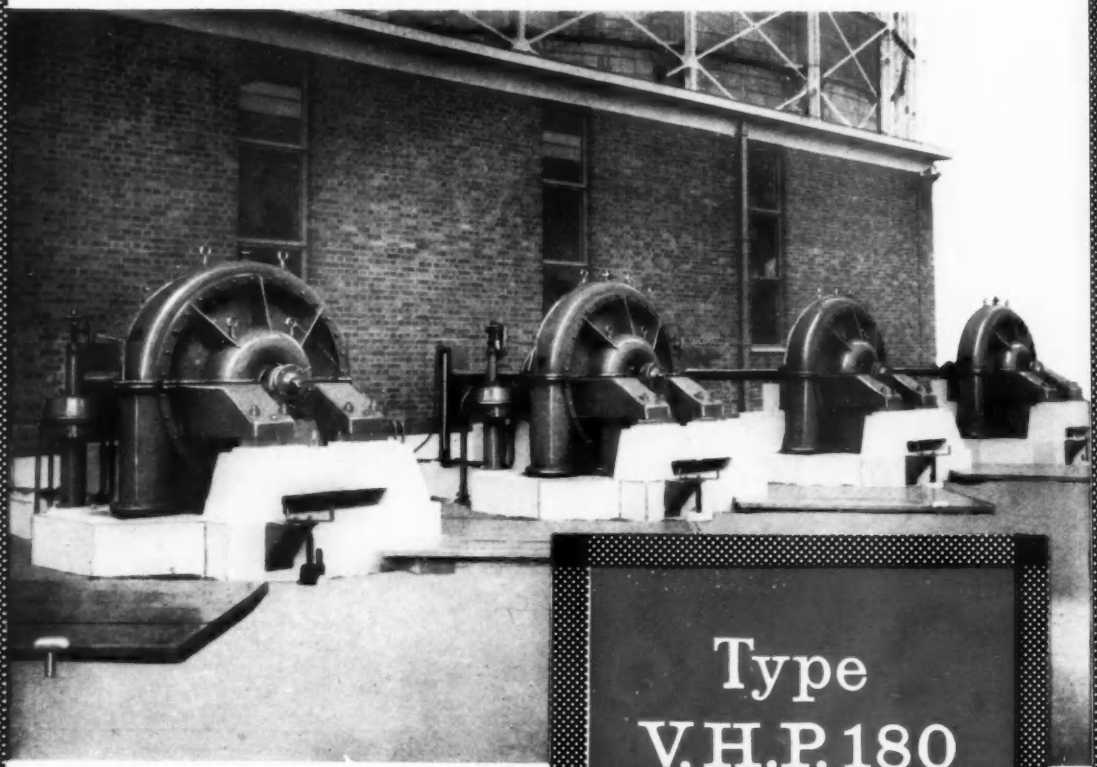

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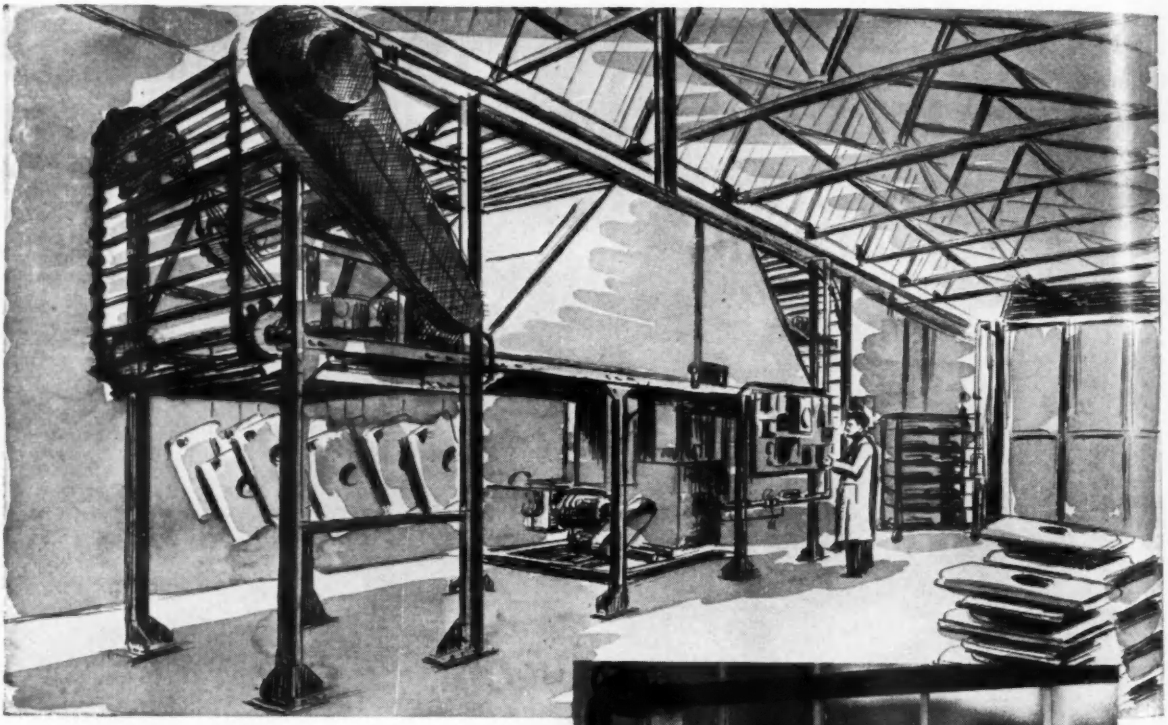

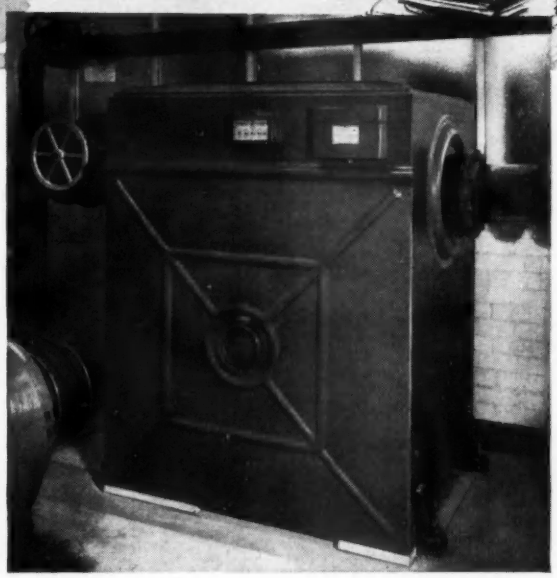

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Gas Journal

VOLUME 300 No. 5026 DECEMBER 30, 1959 111th YEAR

1959—A Historic Year for Gas

IT can be said with truth that 1959 has been a historic year for the gas industry. In the tenth year since nationalisation two events of particular interest happened—liquified methane was imported from the Gulf of Mexico, and the industry as a whole made its first loss during the financial year ending March 31.

Perhaps it is because of these two events that anyone reviewing the year 1959 will be struck by the tremendous vitality of the industry. It would seem to the impartial observer that it is indeed on the threshold of great developments.

The successful shipping of natural gas across the Atlantic last February under marine conditions as bad as could be imagined and its unloading into the North Thames Gas Board's storage tanks at Canvey Island, represented the successful outcome of several years of research. The testing of materials in which to store the liquid, the working out of methods to be used in handling it, and the careful designing of the ship and shore installation had all been necessary to avoid failure under the very severe conditions of reduced temperature. The project was at the same time an excellent example of Anglo-American co-operation.

The failure to make a financial surplus over the previous 12 months, regrettable though it was, may well have had a stimulating effect on the industry by strengthening its desire to devise new methods of gas production and, perhaps more important, to overhaul sales and service facilities to the customer.

Whether this was so or not, it was noticeable that the campaigns in the area boards were stepped up to show the public how successfully gas can compete in the space heating load. The East Midlands, North Thames and Scottish Boards were particularly active in this respect. The former opened during the year two of the four proposed special showrooms in which warmed-air heating appliances could be seen built in house sections. This type of presentation is particularly valuable for builders and architects who can see for themselves how simply whole house heating may be incorporated provided it is done in the early planning stages. It was also noticeable that there was a new outlook towards promotional tariffs throughout the area boards. Some, who had not already done so, were offering gas for domestic space heating on payment of a quarterly fixed charge and a reduced price per therm.

In 1959 also, other projects connected with gas production and conceived in the last few years have matured. Like the importation of methane, they are connected with the use of unconventional raw materials for gas making. It speaks highly for those engaged in planning the industry since nationalisation and their extremely flexible outlook, that such changes have not only been considered but also exploited. We refer, of course, to the new gas-making plants at the Isle of Grain and Romford, employing oil or refinery gas as a feedstock.

Although neither of these two plants can claim the distinction of being the only one in this country in which oil is gasified or gases are reformed, each of its kind is the biggest to be built so far in Great Britain. Each is independent of a carbonising plant and can be, and is, worked on base load. At the Isle of Grain, the South Eastern Gas Board commissioned early this year the first phase of its oil gasification programme, consisting of four Segas units of a total potential output of 20 mill. cu.ft. per day. The outstanding feature of this plant is undoubtedly its control room, from which full plant control can be exercised with a consequent reduction in manpower. At the same time the type of man needed for working the plant has to be of greater intelligence and thoroughly trained in the use of instrumentation.

This in itself represents a big step forward, and to date the Board has relied on the help of British Petroleum's training organisation, since the task of these attendants is more akin to oil refinery practice than it is to that of the conventional gasworks.

The Romford plant of the North Thames Board was formally opened by the then Minister of Power, Lord Mills, in May. With the completion of the pipe-line from the oil refineries at Shell Haven and Coryton and the branch to Canvey Island, purified refinery gas and methane can be brought under pressure for reforming

A Happy New Year to All Our Readers

at Romford. The main plant consisting of four Onia-Gegi units, one of which is capable of processing primary flash distillate, has a designed output of 36 mill. cu.ft. per day. This figure has been exceeded in practice and a total output from all plant on the site, none of which is carbonising plant, may well reach 50 mill. cu.ft. per day.

The need to reduce the organic sulphur content of town gas is met by the Segas and Onia-Gegi plants since some of the feedstocks used by the former are so low in sulphur that the gas needs little or no treatment before distribution, while at Romford, any organic sulphur present in the purified feedstock is converted to H_2S on reforming and absorbed in conventional purifiers, leaving only the traces of sulphur in the enriching gas.

Britain's First Lurgi Plant

During the year the Press were invited to inspect the Lurgi plant being built by the Scottish Gas Board at Westfield in Fife. This plant, so far unique in this country, should be gas making by the autumn of next year. Building is sufficiently advanced for an idea to be formed as to its layout and its effect on the gas industry in Scotland. It will be the first gas production plant to be built at a colliery from which coal supplies will be brought by belt conveyor. This latter point—and the solution of the effluent problems involved—show the potential of such plants producing large volumes of gas —30 mill. cu.ft. per day when fully completed—from indigenous raw material with the minimum of handling.

Its conception and construction speak highly for the engineers of the Scottish Gas Board and the contractors. To find suitable plant for the treatment of the crude gas as produced under pressure, it has been necessary to seek the most suitable types from both Europe and America, as well as visiting successful plants installed in South Africa and Australia. The very considerable 'know how' obtained from the Westfield plant and experience gained from gasifying British coal will be of the greatest assistance to the working of the second British Lurgi plant to be built at Coleshill, near Coventry, for which planning permission was received during the year. The latter plant will be able to provide the largely increased quantities of gas likely to be needed in the West Midlands area in the future and will make possible the closing down of the South Staffordshire Mond gasworks which was also announced during the year.

To get the full benefit from the large gas-making units operating continuously at maximum output, and so at minimum cost, much larger bulk storage facilities are needed. The solution to this is likely to be found in some form of underground storage. So far little has been done in this connection in Great Britain, but a start has been made. The underground cavity in the salt measure at Billingham in County Durham was completed during the year. It has a capacity of 10 mill. cu.ft. and costs about £100,000, which is considerably less than a conventional above ground holder of similar capacity. Plans for drilling a second well at Cousland in Midlothian, are also far advanced in an attempt to prove accurately the resources of natural gas formed there some years ago, in order that, when exhausted, an estimate of its storage capacity may be assessed.

Underground storage of much larger capacity is clearly needed, of the type known as an 'aquifer' and similar to that being developed at Beynes near Paris by Gaz de France. Plans are in an advanced stage for surveys, especially in the south of England, to be carried out to locate the necessary anticlinal strata for this type of storage.

During the year two finds of natural gas were reported, one at Calow, near Chesterfield in Derbyshire, and the second at Whitby in Yorkshire. Developments at both these sites will be awaited with interest. Of the two Whitby would seem to offer the greater possibilities.

So far we have referred to the highlights of 1959, but we must not forget developments in gas production by more conventional means. During the year we have described in some detail a completely new carbonising plant at the Pleck works at Walsall, an extension to the Dublin gasworks and two new coke oven plants recently commissioned by the National Coal Board.

At Walsall the existing carbonising and carburetted water gas plants were swept away to make room for four large capacity continuous vertical retort benches, each of 3 mill. cu.ft. per day, and a new water gas plant consisting of two 3-mill. cu.ft. per day machines. This has had the effect of quadrupling the capacity of the works. It was necessary to adapt the site considerably to make these extensions possible, and the creation of terraces from a terrain with a difference in level of 30 ft. or more, is one of the achievements of this works. A most complete belt conveyor system and the provision of Holmes-Connersville meters for measuring each coal gas stream, carburetted and blue water gas, as well as the volume of gas at the inlet of the holders, are some of the highlights of this works.

At Dublin, an old horizontal plant house has been very skilfully converted for the use of a new 3-mill. cu.ft. per day continuous vertical plant. This seems to have been a particularly well conducted contract since the work was completed nearly two months ahead of the estimated time.

Two New Coke Oven Plants

The two coke oven works described were at Murton, in County Durham, and Cwm, near Pontypridd, in South Wales.

Both of these plants, which supply the local gas board with some 10 mill. cu.ft. of purified coal gas per day, have some individual points of great interest. At Murton the outstanding achievement is the successful application of centralised control to a carbonising plant. The coal and coke handling plants are controlled by operators located in convenient air conditioned cabins to which all information about storage is brought and from which remote control can be exercised, while the control of the by-product plant from a centralised point in the exhauster house building is a completely new conception of the possibilities of remote control at a cokeworks. These systems have made possible a reduction of about 10% in the manpower employed.

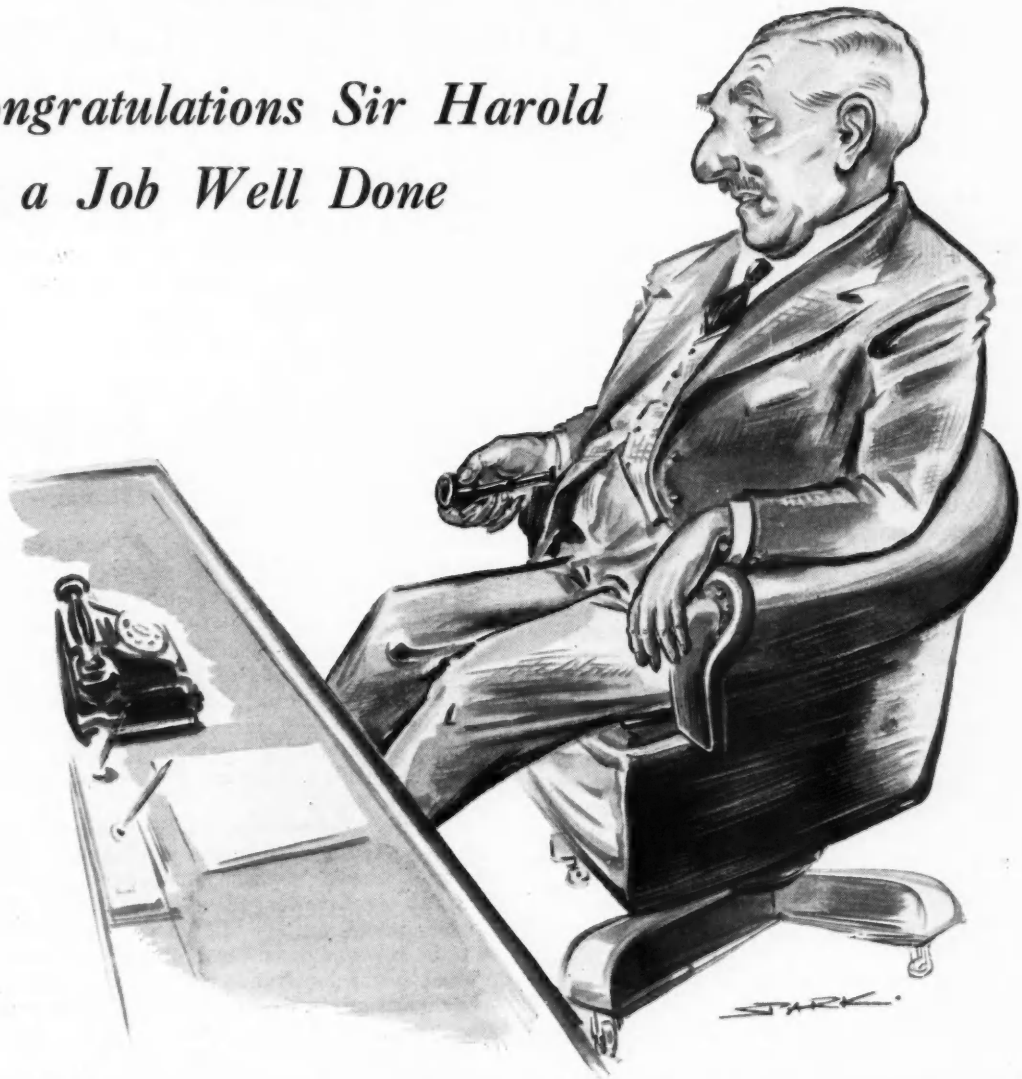
At Cwm, where a very high quality foundry coke is being made, the special points of interest are the civil engineering work done to form the site on which the works stand, the provision of a satisfactory and adequate water supply, the installation of an intermittent direct-

type of sulphate of ammonia plant producing Grade 1 quality salt, and the treatment of the ammoniacal effluent biologically with complete success.

Suffice it to say that with the method of entrusting to a single chief contractor the complete responsibility of the works from the preparation of the site to the building of a completely integrated plant has done much in the years since the war to make possible the plants we describe from time to time. These two specific plants are fine examples of what the co-operation between contractor and client can do in the provision of carbonising plant, and we hope that new plant using new principles of gas production now being exploited may be equally successful. We refer to the progress made during the year at the new hydrogenation plant at Partington, near Manchester, where final detailed designs agreed during the year should make possible its speedy completion.

We feel that it is no empty claim that as we enter the 1960's the gas industry will indeed hold an exciting future for all those now coming into the industry. The area boards are well aware of this and are continually extending their training schemes to attract the right type of young man from school or university.

Congratulations Sir Harold on a Job Well Done



ENGINEER, administrator, soldier, yachtsman—it would take a long sentence to list all the facets of the man who has truly been called the architect of the new gas industry—Sir Harold Smith, K.B.E.

This is the man who, after four years as Deputy Chairman of the Gas Council, became its Chairman in 1952. Under his leadership the industry has transformed itself from a cumbersome, uneconomic sprawl of undertakings into a streamlined organisation which has burst the bonds of traditionalism and is facing the future with determination and ingenuity.

Recent years have seen Sir Harold blossom as a personality, a relaxed speaker (particularly when freed from some of his clumsy scripts), and a champion for gas in an increasingly competitive world. After 53 years in the industry, he retires tomorrow in the knowledge that everyone in the industry to which he has brought such distinction wishes him many years of happy retirement.

PROGRESS, 1959

A review of the gas industry's activities during the past year

Industrial gas: Intense battle for new loads in competitive market

THE stability of gas sales to industry is dependent on the prosperity of industry. During the slight recession in trade from which industry is only now recovering, gas sales for most purposes have followed suit. While the fall in industrial gas sales, therefore, does not represent an actual loss of business, there is, nevertheless, keen competition, particularly with oil products, and industrial gas engineers are fighting hard to obtain new loads.

The Scottish Gas Board, for instance, has made a great effort in coming to grips with the heavy industry in its area and has secured large loads in the heavy engineering, forging and glass industries. Much other big business is under negotiation and much more potential remains. In the West Midlands, more gas loads in the ferrous, non-ferrous and light alloy industries have been obtained, and the pottery business load has advanced to further success.

There is a growing demand for closely controlled heat treatment cycles, extending up to three weeks for large mill rolls. The initial low rate of temperature rise up to 500-600°C., calls for hot air recirculation, changing to normal furnace firing as the temperature is increased. This is a job for which town gas is ideally suited. The stress relieving of very large vessels presents a problem to fabricators who might need a large furnace only once or twice a year. The North Eastern Gas Board, therefore, is examining the suitability of insulating the vessel and circulating hot gases through it. Electricity has been used in similar circumstances and so it is all the more important to study the position.

Not static

The steel saving effected has enabled town gas to replace hot and cold producer gas and fuel oil for billet heating, whether allied steel, high carbon, or mild steel. Many other sales have been driven home, and the industrial gas load is, therefore, far from static. It is clear that in so many cases gas plant is being chosen because of its better performance, the ability to give the right quality of product, and consequently its overall economy.

Technical progress too is of the utmost importance, for it is on technical superiority that our success depends. Both the London Research Station and the Midlands Research Station of the Gas Council have continued to give industrial gas every support; this is again demonstrated by the papers presented to the Autumn Research Meeting of the I.G.E. To show to the world our pride in the work of the research stations (and to encourage prospective consumers), the Gas Council's stand at the Engineering and Marine Exhibition, at Olympia earlier this year, was devoted to this research work and to industrial gas development projects of the gas boards.

Coal: Price formula still obstructs

STOCKS of coal held by the N.C.B. stand at a record high level as a result of rapid reduction in coal consumption both in this country and on the Continent. The financing of coal stocks are an unwelcome burden on the Coal Board, and although there has been no general increase in coal prices during the year some uneasiness on account of costs is justifiable. Stocking policy is fraught with many complexities and it is understandable that in times of plenty consumers elect to hold low stocks.

So far, the Coal Board have been unsuccessful in their efforts to devise a generally acceptable system of bonuses and penalties which would induce consumers to stock coal, and so relieve congestion at the pithead during the summer months and alleviate transport problems in the winter. It is traditional for the public utilities to build up their stocks during the summer. But it will be their misfortune if, while the Coal Board maintain the justifiable practice of full employment at the pits during the summer, consumers who do not carry stocks insist upon full supplies in winter while making no physical or financial contribution towards the solution of problems of their own making.

Gas coals continue to suffer unreasonably from the effects of the coal price formula, and it can occasion no surprise that sales of gas and gas coke are stagnating in face of more attractively-priced alternative fuels. Commenting slightly in advance of the year's figures, it seems that the total quantity of gas available will be down on last year by something more than 2% and, because of the

increased quantity of gas purchased, gas produced at works will be less by about 5%, coal gas by 7% and coal used by 8%. A notable change in gas supplies is the increase in refinery gas and mine gas purchased, and oil gas made at works. More significant, however, is the change in coal consumption which has fallen by no less than 2 mill. tons since last year.

Important trends are now showing in the gas industry's use of coal, apart from, or because of, the obvious effect of the high cost of the coal gas therm. The production of premium cokes is creating a higher demand for East Midlands coals, and the need to produce ordinary coke to a good specification is resulting in a more selective purchase of Midland coals, broadly at the expense of the higher rank Durham varieties. At the same time the Coal Board have been at pains to continue the improvement in coal preparation practice, with the result that there are adequate supplies of good quality coal. Price, of course, follows quality according to the formula, and although most gas boards are able to report improved gas yields, there can be little profit where there is no corresponding increase in coke revenue.

Main hope for future

The future for the production of gas by coal carbonisation might justifiably appear to have reached the stage where no measurable progress is foreseeable without a substantial reduction in the cost of coal. In so far as the burden of the price of the gas therm at the consumer's meter seems to have to rest on the production side of the industry, the main hope for the future must come to depend upon the successful gasification of cheap low-grade coal. There is evidence that the associated problems are under close scrutiny, and the progress of the new gasification plant at Westfield will be watched with the greatest interest, as well as at Coleshill and Partington.

Coke: Production drastically cut

HIGH stocks and unfavourable trends in the solid fuel markets have led the gas industry to a policy of reducing its production of coke in the current financial year by an estimated million tons—that is, to 9¼ mill. tons.

While it is convinced that increased demand will come from implementation of the Clean Air Act, progress in this piece of legislation is so slow that the reduction has been so far fully justified.

By March 31 of this year, 100 orders establishing smoke control areas had been approved by the Minister of Housing, a figure which implied an estimated requirement of an additional 115,000 tons of solid smokeless fuel. The pace is now quickening and at the end of this month, the potential demand has risen to over 800,000 tons.

Stocks at gasworks, however, are quite sufficient to meet any foreseeable extra demand, and boards are making coke only in the quantities and types which they believe can be sold. Some idea of what the present European solid fuel situation is like can be gathered from the fact that in the European coal and steel community countries, together with the U.K., stocks of coal at pitheads rose from 8½ mill. tons in March, 1957, to 48.8 mill. tons in March 1959. Of the latter figure nearly 28 mill. tons was stocked in the last year.

Against this, the gas industry's record is comparatively good: Stocks of coke and fines rose from 2.7 mill. tons at January 1, 1957, to 14.3 mill. tons at March, 1959, half being stocked in the past year.

Heavy imports

The cause of this crisis? Mainly the check to industrial expansion, aided and abetted by continuing milder weather. During the post-war period of increased production heavy imports of coal and oil were made. To illustrate this, in the three years 1956-57-58, over 116 mill. tons of American coal were imported into Western Europe and long-term contracts continue; nearly 6 mill. tons were imported in January-March, 1959. Consumption of fuel in Western Europe more than doubled between 1951 and 1957.

But in the middle of 1957, economic expansion came to a halt and the fall in demand for coal and coke has not so far been checked.

Income from the sale of coke and breeze by the gas industry remains high at £87.15 mill. in the past financial year (£90.88 mill in the previous year). Coke sales were 9.2 mill. tons (9.6), breeze sales 1.7 mill. tons (1.7). The high price and comparative scarcity of good qualities of carbonising coals have led the gas industry to develop methods of gas manufacture based upon the gasification of coal and oil. These do not provide any coke for sale but they constitute at present only a small part of the production of the industry.

Although the total production may decline in sympathy with demand, competition from other fuels, including gas, for heating services, is enabling the gas boards to offer increasing amounts of coke for sale in the domestic market. Summer/winter prices were again operated during the year to encourage the summer stocking of coke. But while the scheme brought forward the summer demand to earlier months, it did not have the desired effect of transferring a substantial part of the winter load.

Cleanglow and Phimax

Popular demand for two new specially-reactive smokeless fuels, Cleanglow and Phimax continued to be satisfactory and supplies were increased during the year. In February, 1959, the North Thames Gas Board introduced under the name Gloco a high-quality c.v.r. coke specially selected for use in approved fires and several other Boards are now marketing the fuel.

Despite the highly-competitive position in Scandinavian markets, sales of U.K. gas coke in this area were a little higher than last year.

The Gas Council has continued its development work on coke utilisation in the domestic, commercial and industrial markets. A new edition of the *Approved Coke-burning Appliances Handbook* has been issued. The N.C.B. and the Gas Council have taken over from the Ministry of Power the responsibility for the national testing of domestic solid fuel appliances.

Legal: Gas boards protect themselves when private Bills affect their interests

SATISFACTORY protection was obtained by boards whose interests were affected by the private Bills deposited for the session 1958-59. Petitions were lodged against certain provisions in the Bootle Corporation Bill and the Milford Haven (Tidal Barrage) Bill by the North Western Board and the Wales Board respectively.

The Bootle Corporation Bill was of particular interest as the Corporation was seeking statutory power to operate mechanically-propelled cleansing vehicles on pavements and footways. As a result of the Board's petition the dangers arising where gas mains are laid in footways with only light cover are reduced, as a weight limit is to be prescribed in writing for such vehicles by the Minister of Transport and Civil Aviation after consultation with the Minister of Power.

Highways Act

As regards Public Legislation, the Highways Act, 1959, which received the Royal Assent on April 30, 1959, becomes law on January 1, 1960. In the report of the Reading Committee dated November 25, 1958, reference was made to proposals which had been submitted to the committee in relation to the Bill. The statutory undertakers for the supply of electricity, gas and water prepared and submitted a joint memorandum which, in addition to commenting on the actual terms of the Bill, also contained proposals for rather more far-reaching amendments, stressing in particular the desirability of establishing a uniform code under which necessary work in highways may be carried on. The committee, while welcoming these proposals, found itself unable to adopt certain of them as their terms of reference in respect of this consolidating measure precluded any amendment which involved a change in the law of substantial importance.

The Gas Council has submitted a memorandum to the committee of inquiry appointed by the Minister of of Labour and National Service to review the operation of the Trust Acts 1831-1940. A similar memorandum has already been submitted to the joint consultative committee of the National Joint Advisory Council on behalf of the nationalised industries.

Underground storage

A more detailed study has been made of the legal problems arising out of the storage of gas underground, and there has been consultation between the representatives of the countries interested in projects of this nature through the medium of the Economic Commission for Europe.

On February 24, 1959, the Local Valuation Court at Solihull gave its decision that the Midlands Research Station at Solihull is in the occupation of the West Midlands Gas Board and not of the Gas Council, with the consequence that it falls for rating purposes under the provisions of Section 6 of the Rating and Valuation (Miscellaneous Provisions) Act, 1955. The appeal of the Solihull Borough Council to the Lands Tribunal was heard in London on December 15 and 16, 1959. The tribunal has reserved its decision.

There have been regular meetings of the solicitors to the area boards, and the rapid technical development of the industry has assured a constant flow of matters requiring their attention.

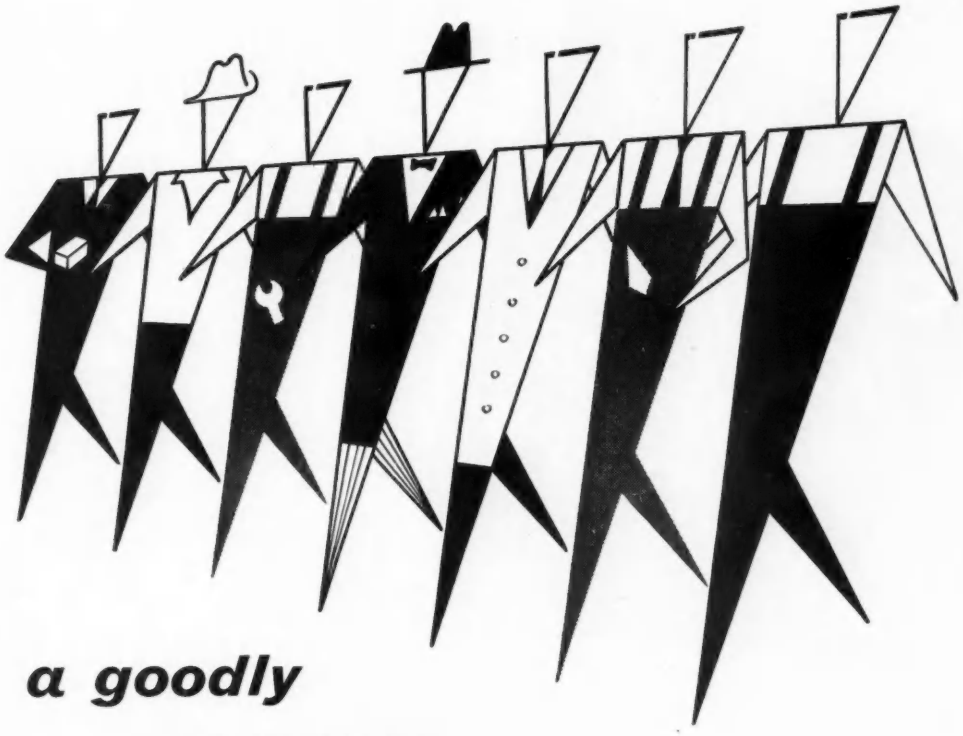
B.G.S.A.: Centralised production problems

DURING 1959, the British Gas Staff Association has actively continued its work at national, area and local levels on behalf of its members, and it is interesting to see in retrospect how all sections of the staff, administrative, technical, sales, clerical and intermediate are protected in the B.G.S.A.

The Association has been most active through the year in endeavouring to ensure that trained staff of works which have been closed have been found suitable alternative employment. The production staff of the industry will, however, have to face many more changes in the not too distant future. The first arrival of the 'Methane Pioneer' in 1959, and the forecast of centralised gas production in a comparatively small number of large works on the coalfields with the laying of a national gas grid, have undoubtedly caused concern to the production staff, especially those now starting their careers.

The Association has closely watched these developments and has stated its view that there should be a national fuel policy to promote the best use of each form of fuel, gas, coal, electricity and oil, in the national interest and that major attention should be given to deriving the greatest benefit from the nation's one indigenous fuel, coal. Given such a national fuel policy, together with the speeding up of the somewhat dilatory implementation of the Clean Air Act, the B.G.S.A. is confident that its engineering members can be assured of satisfactory careers, although movement and some re-training may be necessary.

The sales policy of the industry has been much in the news in 1959. The B.G.S.A. is well aware of the urgent need to sell gas and gas appliances at a rapidly increasing rate. It has, therefore, urged that gas should be sold, not by the therm, but by a measure more comparable with the electricity unit. It has also urged the adoption nationally of a two-part domestic tariff, with gas at 'half rate.' It has, with other staff associations, accepted a special salesmen's agreement, whereby certain salesmen may be paid partly by commission. The B.G.S.A. is prepared to co-operate at all levels in steps taken, in full consultation, to overhaul the selling methods of the industry. The clerical staff in some areas have continued to be disturbed by centralisation



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Removable, one-piece double plate-rack ★
Easy-clean hob with four fast boiling burners ★
Roomy Mainstat controlled oven with drop-type door ★
Wide choice of gay, attractive colour finishes ★

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C237

and the introduction of electronic accounting. There has been full consultation with the B.G.S.A. and co-operation in detail to ensure that resultant human problems were given proper consideration.

Considerable progress has been made in 1959 to achieve staff status for many of those previously classed as 'intermediate'—in particular, slot meter collectors.

The B.G.S.A. is pleased to pay tribute to the fine spirit of co-operation which generally exists throughout the industry. Being readily consulted on problems affecting all classes of its members, it is therefore able to take all possible steps to safeguard their interests.

The Association's journal *Thermfare*, referred to by GAS SERVICE as 'that mighty atom of a journal,' has continued to express, without fear or favour, the views of the B.G.S.A. on matters concerning the industry and its members.

While the Association is pleased that stability in the cost of living in 1959 made it unnecessary to seek a further general increase in salaries, it is firmly of the opinion that, if the gas industry is to continue to prosper, it must attract to its staff new entrants of good scholastic attainment and must retain them by providing satisfactory careers. Salaries must be reviewed regularly in relation to those paid in the best of private and public concerns, or the spirit of loyalty which has long been outstanding in the gas industry will be overstrained.

Mr. G. le B. Diamond, Chairman of the West Midlands Board, addressing the Association's 1959 conference, said: 'This remarkable spirit of loyalty and devoted services to our industry is unimpaired and, if anything, enhanced by the passing of the years.' It will be the aim of the B.G.S.A. in 1960 so to conduct its business that despite inevitable change which will affect all classes of its membership, there will continue to be loyal and co-operative service to the industry which all its members serve. To that end, there must be continued consultation on all matters affecting the future of the industry and its staff.

Women's Gas Federation

MISS JESSIE FRITH, General Secretary, writes: The Women's Gas Federation is an organisation sponsored by the gas industry; as such, it is essential for the industry and the Federation that it should take its place with the other women's organisations, and not be thought of as a gimmick on the part of the industry.

We have in the past been looked upon as a purely social gathering, having a happy time at the industry's expense. This is a heritage from which we still suffer. Nothing could be further from the truth. We certainly receive a great deal of help from many sections of the industry, and we are most grateful for this; our time is not, however, spent on social activities, although this has its place in our programme, and much good work goes on in the branches, all of it completely voluntary. There is an immense amount of goodwill for the industry among the 16,000 members, and this should not be overlooked.

We could be 'more good' than we are if only the industry would appreciate our usefulness and use us more than they do. We can be ambassadors for gas—the over-the-garden-wall contact is one of the most valuable. We can provide a platform at local, area, and national level. We can provide an excellent cross-section of the community for market research purposes, for among our members are the wives of councillors (some of the wives are councillors themselves), the wives of professional and business men, and of the leading tradesmen in the town. We can, and do, harry Members of Parliament and Government departments. We could be used for home testing of appliances.

In the past year, we held our first Scottish conference, which was attended by over 200 delegates from the Scottish branches. They were addressed by the Chairman of the Board, Mr. Sidney Smith, and as a result, a resolution on the subject of freedom of choice of fuel on new housing estates was sent to the Secretary of State for Scotland, who was questioned in the House on the subject. The resolution aroused considerable interest in the Scottish Press.

Useful day's work

The East Midlands area conference, at Skegness, provided an excellent example of the way in which we can be used. Some 600 members paid their own expenses, and many of them left their homes at 5 a.m. after preparing meals for their families, to come to the conference, and hear what the area board Chairman and the Commercial Manager had to tell them of the industry.

The Federation had its own 'session' in the 'Come and Join Us' series on B.B.C. television and took as its subject 'the removal of purchase tax from household appliances,' after which we took the initiative in calling together eight of the leading women's organisations representing some 2½ mill. women, and organising a deputation which met and discussed the whole question with the Economic Secretary to the Treasury.

A cooker competition which included a brief survey of the points looked for in choosing a cooker, provided some interesting information, but it was rather dampening when a leading member of the industry said he did not feel it was worth very much because the Federation did not represent a wide enough cross section of the community.

The five minute 'flash' on gas appliances has become an accepted part of each branch meeting. Since the war, a great deal of hard work has been done to make the Federation a really worthwhile organisation and in the past two years, a number of branch officers' training courses have been held to help the branches to run more efficiently.

In spite of the industry's excellent publicity, there is still a considerable lack of knowledge of its working and the service it provides.

Every public approach, naturally, has its place, but the personal one is still the best, so in 1960, if you have a branch of the Federation, please do not write it off as a 'dead loss,' but use it to the full. If you have ideas about ways in which we can be more useful, please let us have them.

Co-ordination of gas advertising and publicity pays off

IF the Gas Council's publicity activities during 1959 can be summed up in one word, that word is probably consolidation. This must not be taken as suggesting that nothing basically new happened—there were several important innovations—but in general it was a period during which policies established earlier proved their worth.

An outstanding example is co-ordinated advertising. The idea of the Gas Council, all 12 area boards and the appliance makers, dovetailing their campaigns to ensure that the industry speaks with one voice at any one time had been established a year or so previously. Perhaps the full effect of this co-operation was felt in the space heating campaign, which was held last autumn. The success of this co-ordination was reflected in the remarkable sales achieved.

Gas Council advertising during the year strengthened its appeal to teenagers and ensured that the impact it made on the public was more in keeping with that of its bigger—and wealthier—competitors. Advertising in the *Eagle*, *Girl* and *Swift* comics proved its popularity—it has a six million readership—by the success of the Master and Miss Therm competition which had its final at Hulton's Boys' and Girls' Exhibition; the publication of 'Learning to Cook the *Girl* Way' provided further evidence of the way in which young people can be encouraged to associate gas with modern and exciting living.

In newspaper and magazine advertising there have been three trends discernable. Half-pages in newspapers have followed the present-day tendency towards larger advertisements making a 'broadside' impact; of these the Today-Tomorrow series of trade and technical advertisements is noteworthy.

Insistence on colour

'Holding campaigns' in the Women's Press have conformed to the current insistence on full colour and have included a 'sixth dimension' by adding central heating to the established fields of cooking, water heating, space heating, refrigeration and home laundry; this market is approached at two levels which might be dubbed 'luxury' and 'popular.' A new technique for gas advertising is the strip cartoon, in the long-established Horlicks tradition, and these layouts are also in colour.

Front covers have been taken in the trade and technical Press, and in addition double-page spreads have been presented in the 'ed-ad' manner, utilising bought space for stories on the use of gas in various industries. An elaboration of this type of advertising is the highly successful series of supplements, which is now in its second year, appearing in the *Architect's Journal*. Most of these have been reprinted more than once and they are to be bound in a handbook 10,000 copies of which will be distributed during 1960.

Other notable achievements during the year have been the Ideal Home supplement to the *Daily Mail*, in which the Gas Council and the appliance makers collaborated and of which 12,000 reprints were distributed, and the Space Heating supplement to the *Reader's Digest* which was reprinted to the tune of a quarter of a million copies. In this again the manufacturers' support was an essential feature.

The past year has been a record one for the Gas Council's film library, the circulation of films and the audiences which have seen them topping all previous figures. Three new films have been produced—'Piping Hot,' 'Window to the Sky' and 'Three of a Kind'—and mention must be made of 'The Voice of Mr. Therm,' the talkie strip which delighted delegates to the Sales and Service Conference at Harrogate and is now going the rounds of the area boards.

Variety of exhibitions

Exhibitions have included Building, Fuel Efficiency, Engineering and Marine, as well as the Ideal Home, Royal Show and various other annual events. Of particular interest was Hulton's Boys' and Girls' Exhibition at which the finals of the Master and Miss Therm competition were staged and at which Chris and Carol, the leading characters in the *Girl* strip cartoon, came to life thanks to the vivacity and skill of two North Thames home service advisers (who, incidentally, repeated their successful impersonations at the Harrogate conference). Mention of Harrogate serves as a reminder of the comprehensive appliance exhibition at that conference—easily the best to date.

Mr. Therm's Five Card Trick was the theme of the Gas Council's stand at the Ideal Home. Looking at one of the displays are Sir Henry Jones, Deputy Chairman, Gas Council, Mr. S. G. Aberdein, Commercial Manager, N.T.G.B., and Mr. V. W. Stanton, Commercial Manager, S.E.G.B. On Mr. Aberdein's retirement Mr. Stanton succeeded him as Chairman of the Commercial Managers' Committee.

Publications have been many and varied, but particular mention might be made of Today and Tomorrow, a booklet on the organisation of the industry, the attractive vegetable cookery books written by the Bon Viveur team, and 'Good News,' a booklet showing how gas can assist in implementing the House Purchase and Housing Act.

THE INSTITUTION'S YEAR

THE professional, educational and technical activities of the Institution of Gas Engineers have been maintained throughout the year. In particular, the Institution has enjoyed the collaboration of the Gas Council, the area gas boards, the member firms of the Society of British Gas Industries, and the members of their staffs who serve on the Institution's Council, technical and educational committees or subcommittees, or who represent the Institution on committees or at conferences of kindred organisations.

There was a slight increase in membership of the Institution during the year, from 3,500 to 3,550. The death of 23 members is recorded with regret. Included among these were Sir Frederick West, G.B.E., a past-president and honorary member, and three other eminent honorary members; Major A. Forward, formerly managing director of the American Gas Association, Colonel William Reid Glover, C.M.G., D.S.O., and Mr. J. F. Ronca, O.B.E.

The names of the following members of the Institution were included in the New Year or Birthday Honours lists for 1959: **C.B.E.,** Mr. T. C. Finlayson (Member), Dr. A. C. Monkhouse, B.Sc. (Member). **O.B.E.,** Mr. G. Tiplady (Associate).

The Institution's seven district sections and the affiliated associations in Scotland and Ireland have all had a successful year. A variety of papers covering a wide field of technical interest has been presented and discussed at their meetings. Many of these papers and discussions have been reproduced in the technical press. The junior gas associations, which through the British Junior Gas Associations Joint Council, are represented on the Institution's Council, have also been very active throughout the year and have provided platforms for the presentation and discussion of some papers of high standard and considerable interest.

A.G.M. Review

The 96th annual general meeting of the Institution was held at Llandudno from May 26-29. It was fitting that having an eminent Welsh gas engineer as President, the Institution should go to Wales for its principal, and successful, meeting. Thanks are due to the efforts made in connection with it by the civic authorities and by the President and his colleagues of the Wales Gas Board.

Several eminent gas engineers from Europe were present, including the President of the International Gas Union, Mr. Bengt M. Nilsson and the President of the Royal Belgian Gas Association, Mr. P. Dorzee. Gas engineers from Australia, Hong Kong and Singapore attended, and the Governments of the United States of America and the U.S.S.R. were represented.

A civic reception and dance was given by the Chairman (Councillor Harold Neville), and members of the Llandudno Urban District Council, and a novel feature was a Welsh evening, arranged by the President.

An interesting programme of papers covering production, distribution and utilisation of gas followed a stimulating Presidential address by Mr. E. M. Edwards. Included in these papers were two very interesting contributions from French engineers, dealing respectively with the exploitation of the natural gas deposits at Lacq and the research programme of the French gas industry; a paper from Denmark on the use of propane and butane for gas-making in vertical retorts; and a paper on the re-organisation of the Hong Kong and China Gas Company were also presented.

Development report undertaking for I.G.U. Stockholm conference in June, 1961

The principal guests at the President's luncheon were Sir William Jones, C.B.E., Deputy Chairman, Denbighshire Quarter Sessions, and Mr. B. M. Nilsson, President of the International Gas Union.

Works visits were arranged to Maelor gasworks of the Wales Gas Board, Wrexham; the Point of Ayr colliery and the methane station of the National Coal Board and the Wales Gas Board; Courtaulds Ltd., Holywell; Hawarden Bridge steelworks, Shotton; Chance-Pilkington optical works, St. Asaph; Monsanto Chemicals Ruabon; A.E.I. Hotpoint, Ltd., Llandudno Junction, and the Aluminium Corporation Ltd., Dolgarrog.

Presentations

Ladies' visits were arranged to Penrhyn Castle, Bangor and Bodnant Gardens, Tal-y-Cafn, with a coach tour of the surounding countryside. Other social arrangements included a short sea cruise on one evening and a whole-day tour of Snowdonia.

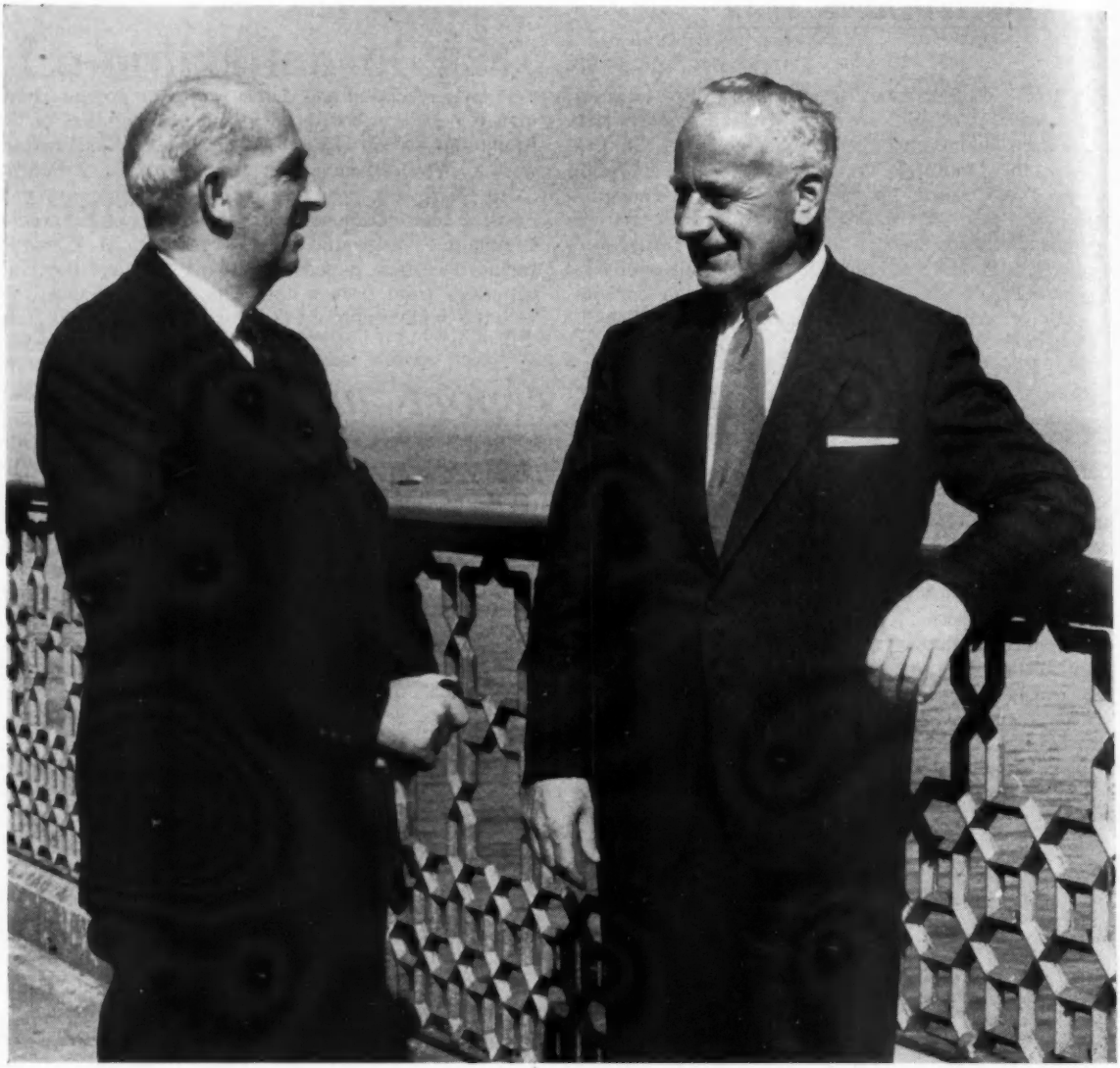
The President presented the Institution Gold Medal for 1958 to W. J. Bennett, K. J. D. Brady, and E. W. G. Dance, for a paper on 'Further experiments with shared and individual flues for gas appliances,' read at the 24th Autumn Research Meeting in London, on November 19, 1958.

The H. E. Jones London Medal for 1958 was awarded to David Beavis, for a paper on 'Work study: Three years' progress at Edinburgh,' read at the 95th A.G.M.

The Institution Silver Medal for 1958 was awarded to E. T. Pickering, for a paper on 'Clean air and clean water and the gas industry,' read at a meeting of the Midland Section of the I.G.E. in October, 1958.

The Institution Bronze Medal was awarded to T. Bryan, for a paper on 'Electrical economy in gasworks,' read at a meeting of the Midland Juniors in March, 1958.

The William Dieterichs Memorial Prize was awarded to W. E. Francis, for a paper on 'The design of air



MR. E. M. EDWARDS AND MR. D. D. MELVIN AT LLANDUDNO

blast tunnel burners,' read at the 24th Autumn Research Meeting.

At the meeting, held at Church House, Westminster, on November 17-18, 1959, under the Chairmanship of the President, Mr. D. D. Melvin, the technical and educational reports of the Institution and research reports of the Gas Council, together with technical and research papers, were presented and discussed. In order that the programme could be adequately covered in two days, parallel sessions on the afternoon of the first day were arranged. Three papers dealing with utilisation of gas were presented and discussed in the Hoare Memorial Hall, under the Chairmanship of the Senior Vice-President, Mr. H. S. Cheetham.

A particularly important contribution to this meeting was the presentation of an address entitled 'Research in the gas industry,' by Sir Harold Smith, Chairman of the Gas Council. In this, Sir Harold reviewed the development of research in the gas industry from the early days until the present time, and gave the members of the Institution an impression of the ways in which the industry is likely to develop in the next decade or two. This was both inspiring and encouraging.

The opportunity was taken to mark the occasion of the impending retirement of Sir Harold by presenting to him an illuminated address, together with the signatures of past-presidents, honorary members, members of the Council of the Institution and Chairmen of Committees, the whole being bound in a blue Morocco leather album, inscribed with the Institution's coat-of-arms. The President, in presenting this tangible expression of the Institution's regard for Sir Harold, referred to the outstanding contributions made to the gas industry in general and to the Institution in particular by Sir Harold over the last 50 years. He had served on practically every technical and educational committee of the Institution and had also held the highest offices, including that of president in 1937-38.

Arrangements had been made to convene in London, on the following day, a meeting of the International Committee for the Study of New Gas Distribution Techniques. This enabled several members of the Committee to attend the Autumn Research Meeting and it was pleasing to the Institution to have so noteworthy a representation from overseas gas associations.

The President presented the following awards:—

(*a*) *Charles Hunt Memorial Medal, 1959.*
Associate Membership Examination (Gas Engineering, Supply)—Donald Read (Singapore).

(*b*) *James Archibald Maclay Memorial Prizes, 1959.*
Gas Technology (Supply)—Donald Ernest Jarvis (London). Gas Salesmanship and Consumer Service—Ronald Windle (Sowerby Bridge).

(*c*) *Diplomas in Gas Engineering* (*Manufacture*).
Cyril Halstead (Blackheath, Birmingham), James Hatfield, D.F.M. (Derby).

The Autumn Research Meeting luncheon was held at the Savoy Hotel, where the principal guest was Sir Dennis Proctor, Permanent Secretary to the Ministry of Power.

Stockholm Preparations

The Institution has throughout the year continued to collaborate closely in all the activities of the International Gas Union, of which it is a founder member. Members of the Institution have been appointed to serve on the Council and upon all the technical committees that have been set up by the Council to investigate specific problems relating to the production, distribution and utilisation of gases used for town purposes.

Mr. W. K. Hutchison, C.B.E. (past president) is Chairman of the Committee for the Study of New Gas Distribution Techniques, and Mr. G. E. Currier, O.B.E. (Honorary Secretary and past-president), is Chairman of the Committee for the Study of Safety Conditions in Domestic, Commercial and Industrial Gas Installations. The Assistant Secretary (Mr. A. G. Higgins) is Secretary to both these committees.

Consideration is being given to reports and papers which are to be presented and discussed at the 8th International Gas Conference, to be held in Stockholm from June 28-31, 1961. The Institution has undertaken to collect information internationally and to present a report on developments in two fields in which it was responsible for the presentation of reports at the Rome conference in 1958. These two reports are to deal respectively with (i) further study of unconventional flues, (ii) further study of the gasification of oil and processing of refinery gas for the production of town gas.

International Collaboration

In addition, consideration is being given to subjects for individual papers for presentation at the conference. It is proposed to arrange for papers dealing with (i) domestic heat services by gas (including space heating, high-efficiency gas fires, cooker ignition, new type of water heaters, new type of flues, etc.), (ii) transport, storage and distribution of liquid methane, and (iii) developments in industrial gas utilisation.

The Institution's committees are collaborating with the gas associations of other countries in providing appropriate information relating to this country for inclusion in the reports and papers for which they are to be responsible.

A joint meeting of members of the British Coke Research Association, the Coke Oven Managers' Association and the Institution of Gas Engineers was held at the Institution of Civil Engineers on November 11, when 'The first year at the coke research centre,' by G. W. Lee, Director, British Coke Research Association, was presented and discussed. There was an attendance of about 200.

At the annual general meeting of the Institution on May 26, Corporate Members passed a resolution agreeing that a petition be presented to the Privy Council for the grant of a supplemental Charter to effect amendments to the Charter relating to the objects and aims of the Institution, the creation of new classes of membership and a revision of the letters which members of the Institution may use after their names. At the same time, the opportunity is being taken to amend the by-laws of the Institution, with particular reference to the educational requirements for election to Corporate Membership. The developments of the gas industry into three streams of technical activity relating respectively to production, distribution and utilisation have made it desirable for students to be able, in addition to acquiring a general knowledge of gas engineering, to specialise in one of these three fields. The regulations for the Associate Membership examination are currently being amended in this connection, and subject to the agreement of the Privy Council, the revised regulations will become operative on and after October, 1962.

The initiation of a new class of Graduates is intended to bridge the gap in the current membership structure between the classes of Student Membership and Associate Membership, a gap which is likely to be accentuated by the proposed revision of the education regulations.

Further, the introduction of the class of Companions will enable a widening of the membership of the Institution among those interested in its activities, but not possessing the particular qualifications of examination, training or occupation required for Corporate Membership.

Conference Delegates

The Institution collaborated with other Institutions and assocations concerned with utilisation of fuel in an exhibit entitled 'Comfort and health in the home,' as part of an exhibition on the general theme 'Science in everyday life' arranged in connection with a conversazione given by the Parliamentary and Scientic Committee on December 9 at the Royal Society, Burlington House. A large number of eminent scientists, members of both Houses of Parliament, and of professional and research institutions attended the conversazione.

The 20th report of the Chairmen's Technical Committee, which was presented and discussed at the research meeting in November, contains an account of the technical work of the Institution.

The Institution has appointed official delegates to attend conferences arranged by other kindred organisations including the Health Congress of the Royal Society of Health and the conference of the National Society for Clean Air. It has also, through its representatives

on various committees of the Institution and of allied associations, continued co-operation with various Government departments and kindred organisations.

The Codes of Practice sub-committee has invited the Director of the Building Research Station (D.S.I.R.) to be represented on the sub-committee and is grateful that this invitation has been accepted. This appointment is likely to lead to considerable assistance to the Codes of Practice sub-committee and its drafting panels in the work of preparing recommendations and Codes of Practice for the utilisation of gas in domestic and other premises.

The Gas Distribution Committee has, during the year, prepared *Recommendations for the maintenance of gas governors used for distribution.* These recommendations have been published as a separate Communication of the Institution and are also included in the I.G.E. Safety Recommendations. They are intended to be used as complement to I.G.E. Safety Recommendation P.11 (*Recommendations for the safe installation, operation and maintenance of exhausters, gas pumping plant, governors and meters*) which was prepared by the gasworks Safety Rules Committee.

Committee Investigations

The Gas Distribution Committee has also published as a separate Communication, *Recommendations for the laying of steel gas service pipes,* which is intended as a companion to Communication 491, *Recommendations for main laying.* The Committee has continued to collect and collate information concerning broken mains and also details of incidents involving personal injury, fire or explosion. Investigations of this nature are necessarily of a long-term nature, but the Committee is collecting together some most useful information from which it is hoped to draw conclusions leading to better distribution techniques in the future.

A panel appointed by the Gas Distribution Committee to investigate the external protection of steel pipes has been actively collaborating with a number of organisations concerned with the manufacture and marketing of materials used for the protection of steel pipes, and is considering in particular the relative merits of bituminous materials and of coal tar enamels for pipe protection.

The Cast Iron Pipes Liaison Committee, the membership of which comprises members of the Gas Distribution Committee and representatives of the manufacturers of cast iron pipes, is preparing recommendations for the handling and transportation of cast iron mains. It has also developed new designs for high pressure syphons which are now being considered by the appropriate technical committee of the British Standards Institution, for inclusion in a British Standard.

The Gasworks Effluents Committee of the Institution has continued to collaborate throughout the year with the committees of the Gas Council concerned with legal, commercial and research matters relating to the disposal of gasworks effluent. A small sub-committee has been appointed to investigate and report to the Gasworks Effluents Committee upon the various processes that have been established in recent years for the biological purification of gasworks effluent in the absence of sewage. For this purpose the sub-committee is visiting pilot and full-scale plants recently installed in various parts of the country.

The Gasworks Safety Rules Committee has prepared recommendations relating to safe access to bunkers and hoppers and has also prepared recommendations designed to protect those who work with certain types of catalyst. These recommendations are entitled *Memorandum on precautions to be observed in the handling of catalysts which have been used in the gasification of heavy petroleum fractions.* Both are to be included in the I.G.E. Safety Recommendations in the very near future.

In spite of the efforts made by the area gas boards and of the considerable publicity given to accident prevention by the Institution and other organisations during recent years, accidents continue to happen at gasworks. The Gasworks Safety Rules Committee is privileged to be given full details of practically all such accidents by the area boards concerned and regards the consideration of the circumstances leading up to these accidents and the lessons to be learned from them as one of its principal functions. A third brochure entitled *Unusual incidents at gasworks and their lessons* is now being printed, in which a number of accidents are described and recommendations which should prevent their repetition are offered. The Committee hopes that this further publication will be a substantial contribution to accident prevention.

A number of discussions have been held with representatives of the British Industrial Measuring and Control Apparatus Manufacturers' Association in regard to the use and availability of electrically-operated instruments or instruments containing gas connections and electrical equipment. A summary of the findings of these discussions is given in Supplement 1 to the 20th report of the Chairmen's Technical Committee.

Separation of Services

The Meters Committee which was re-constituted just over a year ago, with a membership representative of all the area gas boards, the Meters Section of the Society of British Gas Industries and the Institution of Gas Engineers, has the following terms of reference—

> 'To consider any technical matters relating to gas meters and to report to the Council thereon.'

This committee is maintaining liaison with the Meters Sub-Committee of the Watson House Technical Committee and with the Meters Section of the Society of British Gas Industries. Two sub-committees have been appointed dealing respectively with the standardisation of dimensions of small-cased meters, and the performance of meters with particular reference to the factors responsible for the failure of meters in service.

The *ad hoc* committee on electrical bonding was appointed in February 1957 to:

> 'Consider the problems arising from the flow of electric currents in gas installations and services, consequent upon cathodic protection, and the existence together of electrical and gas installations in domestic and other premises.'

This Committee, after a very thorough investigation, decided that, however desirable the separation of electrical and gas services may be, in practice it is nearly always impossible to achieve. It therefore recommended that it would be desirable to universally

develop a practice of establishing a continuity bond wherever a gas service pipe, a gas installation pipe, a cathodically protected distribution system, or a wrapped gas main are to be severed. The report of the committee was accepted by the Gas Council, which requested the Institution to initiate approaches to other public utilities concerned. For this purpose, a meeting was arranged which was attended by representatives appointed by the Institutions of Electrical, Gas and Water Engineers. At this meeting, the recommendations of the committee were fully considered and the representatives of the Institutions of Electrical and Water Engineers have subsequently arranged for them to be considered widely within the water and electricity industries. It is hoped that a further joint meeting of representatives of all three Institutions may shortly be arranged to consider the views of these two industries.

A sub-committee has been appointed to review the whole question of unaccounted-for gas, and a small panel of the Gasworks Safety Rules Committee is considering safety precautions in connection with the storage and use of liquid oxygen at gasworks.

The 36th report of the Gas Education Committee, which was presented and discussed at the Autumn Research Meeting, contains an account of the educational activities of the Institution.

Teaching Techniques Course

A short course for teachers of gas fitting, arranged by the Ministry of Education, was held at Lodge Hill, Pulborough, from August 22-29, and was attended by 46 teachers. The course was held under the direction of Mr. F. Caunce, who was assisted by Dr. D. Ridge and Dr. P. Samuel. The course was officially opened jointly by Mr. H. S. Cheetham, Senior Vice-President, deputising for the President, and Mr. W. K. Hutchison, Chairman, South Eastern Gas Board. The emphasis of the course was upon teaching techniques, but there were also some interesting specialist lectures by officers of the South Eastern Gas Board. There were visits to Perl Controls Ltd. and A.P.V. Paramount Ltd., at Crawley New Town and also to the central laboratories of the South Eastern Gas Board. The course was an unqualified success, due mainly to the enthusiastic leadership of the officials of the Ministry of Education and also to the considerable assistance given by the South Eastern Gas Board.

The Christmas lectures for young people have now become an established feature of the educational activities of the Institution, its District Sections and affiliated associations. Apart from the lectures given annually under the ægis of the Institution in London, arrangements are made by the District Sections or by the District Gas Education Committees for lectures in provincial cities and towns. Since the initiation of these lectures there have been a total of 37 lectures in 17 cities and towns in England, Scotland and Wales which have been attended by some 10,000 young people.

In the Christmas vacation 1958-59, the London lecture was given by Mr. L. W. Andrew, at the Imperial College of Science and Technology, on the subject 'Harnessing the flame.' 'Flame' was also the subject of lectures given by Mr. J. E. Cooper, at Leicester, and by Mr. W. F. Thorne, at Poole; in Manchester Mr. L. G. Townsend lectured on 'Combustion.' During the Easter vacation, Mr. J. A. Prigg visited Newcastle-upon-Tyne to talk to young people on 'Harnessing the flame,' and Dr. J. E. Garside lectured in Leeds on the subject of 'Flame.'

The London Christmas lecture is to be given on January 5, 1960, by Mr. J. E. Davis, O.B.E., who will talk on 'The movement of gases.' In the provinces, Mr. J. E. Cooper will be lecturing in Nottingham and at Wolverhampton, and Mr. Thorne at Reading. Dr. R. Williamson will be lecturing at Liverpool and Manchester.

Associate Membership Assessors

Sandwich courses have now become an accepted means of training gas engineers, and courses of this nature are being conducted at the Royal Technical College, Salford, the College of Technology, Birmingham, the Enfield Technical College and Westminster Technical College, which are used by area boards in England and Wales for their student engineers. In addition, the Heriot-Watt College, Edinburgh, conducts a course on the sandwich principal leading to the Associateship of the College in civil and gas engineering; this course is used by the Scottish Gas Board for its student engineers. Success in these courses is accepted by the Institution as satisfying the current examination requirements for Associate Membership and, in order to ensure that the standards required by the Instituion are attained, assessors nominated by the Institution have been appointed by all the colleges except in the case of Enfield, where the students enter for the Institution's examination.

Particular attention is being paid by area boards, by the colleges and by the Institution to the practical training which is an integral part of a sandwich course. The Gas Education Committee has appointed a sub-committee to consider the preparation of a model scheme of practical training to be associated with sandwich courses in gas engineering. The sub-committee is working on this scheme which, it is hoped, will be of assistance to area boards in devising new or amending existing courses of practical training.

Revision of Examination

Arrangements are being made by the Institution for a week's refresher course for station and deputy station engineers to be held at Pembroke College, Oxford, during the Easter vacation, 1960.

Details of the proposed revision of the Associate Membership examination, which is to be effective on and after November, 1962, are given in the 36th report of the Gas Education Committee. Provision is made for specialisation in one of three fields of gas engineering—production, distribution or utilisation, this specialisation becoming effective only after candidates have attained a minimum desired level in gas engineering generally. These regulations have been prepared to enable the education scheme of the Institution to develop in conformity with the functional pattern of the gas industry. The regulations are also closely associated with the requirements for election to the proposed class of Graduate Membership and of the revised requirements for election to Associate Membership.

PEOPLE AND PLACES

Above: *Pleasant working conditions indeed for these girls in the Eastern Gas Board's new central billing office, at Woodall House, North London.*

Left: *At Canvey Island, Sir Harold Smith was photographed in conversation with Captain J. T. Gibson, skipper of the 'Methane Pioneer' and Mr. Ed. Battson, President of Comstock International Methane Inc.*

Below: *Sir Harold again, pictured with the Chairman of the Eastern Gas Board, Mr. J. H. Dyde; the Deputy Chairman, and the Board's Senior Officers, on Sir Harold's visit to Tottenham earlier this month.*

Above: *The Gas Council's stand at the Engineering, Marine Welding and Nuclear Energy Exhibition in April last.*

Right: *A significant increase in Sc.G.B. reserves of natural gas will be made if drillers working on Cousland No. 6 well-head, near Dalkeith, are successful.*

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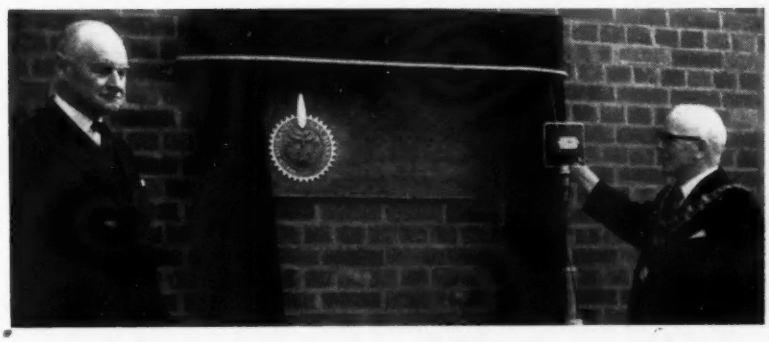

Right: *Mr. G. le B. Diamond, the Chairman of the West Midlands Gas Board, is pictured here with the Mayor of Walsall in April at the unveiling of a plaque during the opening ceremony at Walsall works. The reconstruction of the works cost about £5 mill.*

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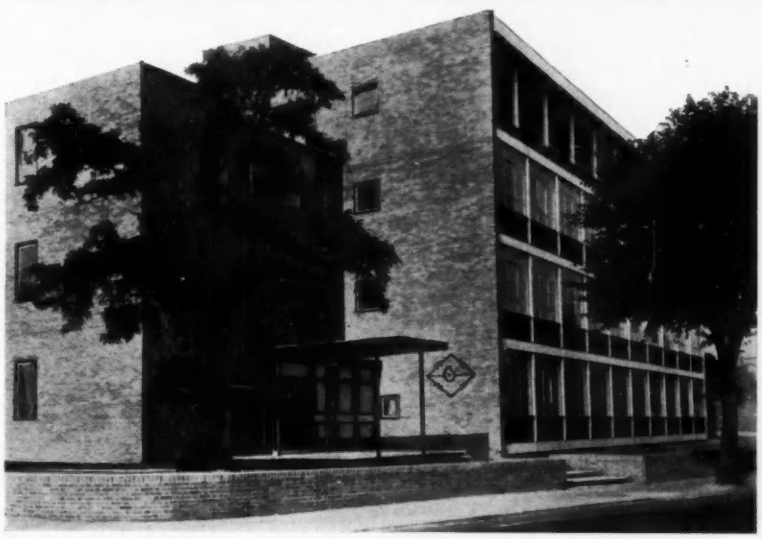

Bottom right: *New research laboratories for the Cambridge Instrument Co. Ltd., were opened in October by Lord Adrian,* O.M. *The building contract was completed in just under a year. The company started with a small workshop and a staff of seven; it is now represented in over 30 countries.*

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SOME OF THE GAS INDUSTRY'S PERSONALITIES OF 1959

Published first as a quarterly, then as a monthly, and from 1874 as a weekly technical newspaper, the GAS JOURNAL *celebrated its five thousandth issue in May. Since 1849, this—one of the oldest established technical journals in the world—has mirrored the affairs of the gas industry and made its own contribution to the industry's enginering and sales progress.*

SIR HAROLD SMITH was undoubtedly the personality of the year in the industry. Earlier in 1959 he had conferred on him the honorary degree of Doctor of Law at Leeds University. In a very busy year, he and Lady Smith officially opened the South Western Gas Board's mechanical accounting department at Bath and visited the Sales and Service Conference at Harrogate at which he, for the first time, chaired the opening session. He was also present at the Autumn Research Meeting in November. Sir Harold retires tomorrow as Chairman of the Gas Council; we wish him every success for the future, and welcome his successor, SIR HENRY JONES.

MR. LESLIE F. STEMP, legal adviser to the Gas Council, retired after 33 years' service to the gas industry. Mr. Stemp joined the National Gas Council in 1926 as legal assistant to Colonel S. S. Ogilvie. Mr. Stemp was later appointed legal adviser to the National Gas Council, then to the British Gas Council; when the industry was nationalised he became the first legal adviser to the Gas Council.

MR. HEDLEY PARKER succeeded Mr. Stemp. He joined the Gas Council as an assistant secretary in December, 1953, and had been assistant legal adviser since 1956.

MR. S. G. ABERDEIN retired as commercial manager of the North Thames Gas Board in April. Mr. T. V. GARRUD became Commercial Manager; MR. J. A. BUCKLEY, Sales Manager; MR. G. H. W. MADGE, Controller of Services, and MR. F. R. DARLING became responsible for the building and property maintenance department, in addition to the estate department. He retained his secretaryship.

MR. JOHN W. PALLISTER retired from the Tees-side Division general managership of the Northern Gas Board. He was one of the men who started the Tees-side gas grid, which was extended and completed after the various gas undertakings were nationalised.

MR. W. STEPHENSON retired from his position as the North Western Gas Board's smokeless solid fuels officer, but continued to serve the Board in a consultative capacity. His successor was his deputy, MR. R. A. W. HOLLINGDALE.

MISS EDITH BAILLIE was appointed the North Thames Gas Board's Chief Home Service Adviser. This followed the appointment of MRS. JOAN ROBINS to the post of Home Service Adviser to the Gas Council.

MR. P. D. M. AIRD was appointed Chairman of Glover & Main Ltd. and the principal associated trading companies, Thomas Glover & Co. Ltd., R. & A. Main Ltd., and Main Water Heaters Ltd.

MR. J. H. DYDE, O.B.E., was appointed Chairman of the Eastern Gas Board in succession to SIR JOHN STEPHENSON, C.B.E. MR. F. T. BROOKES, M.B.E., became Deputy Chairman.

SIR HENRY JONES, Deputy Chairman of the Gas Council, was elected President of the British Road Tar Association, succeeding MR. C. E. CAREY.

DR. A. E. HAFFNER was appointed a Member of the Southern Gas Board. He combines the duties of Board membership with those of Chief Engineer to the Board.

MR. RICHARD WOOD was appointed Minister of Power in succession to Lord Mills; MR. J. C. GEORGE became Parliamentary Secretary to the Minister.

MR. J. D. C. WOODALL was appointed Sales Manager of the South Eastern Gas Board.

MR. D. D. BURNS, O.B.E., was re-appointed Deputy Chairman of the Scottish Gas Board. MR. D. D. MELVIN was re-appointed a member of the Board and LORD MATHERS a part-time Member.

MR. J. CASTLE was appointed General Manager of the Liverpool Group of undertakings in succession to the late MR. J. G. O. DRAKE.

MR. ATHOL W. BROWN was appointed Assistant Production Engineer at the headquarters of the Southern Gas Board.

MISS K. BOSWELL was appointed Senior Home Service Organiser to the North Thames Gas Board.

The Year's Obituary

DAME VERA LAUGHTON MATHEWS

DAME VERA LAUGHTON MATHEWS, former adviser on women's affairs to the Gas Council and member of the South Eastern Gas Board since vesting day, died in London in September, on her 71st birthday. It was in 1950 that she became adviser on women's affairs to the Gas Council. In 1949 Dame Vera became president of the National Smoke Abatement Society, a position she held for two years. In addition to being vice-president of the Women's Gas Federation, she was an associate of the Institute of Fuel, and an associate member of the Institution of Gas Engineers. She was created D.B.E. in 1945. A widow, Dame Vera had married in 1924; there are three children and two grandchildren. Solemn Requiem Mass was celebrated in Westminster Cathederal, which professional and civic dignitaries attended.

COLONEL W. R. GLOVER

COLONEL W. R. GLOVER, C.M.G., D.S.O., T.D., died at the age of 77. Honorary president of Glover & Main Ltd., Colonel Glover retired as chairman of the company in February this year. His death marked the end of 60 years' continuous service with the gas industry. A grandson of the founder of the company which bears the name, he joined Thomas Glover & Co. Ltd. in 1900 as an apprentice under his uncle, the late Mr. J. G. Glover. In 1919 he was appointed managing director of Thomas Glover & Co. Ltd., and in 1949 was appointed chairman of the Glover & Main group of companies. An active member of the Institution of Gas Engineers since his election in 1931, Colonel Glover was for many years a trustee of the Benevolent Fund, and in 1955 was elected to honorary membership of the Institution. He was also a past chairman of the Society of British Gas Industries and a past master of the Haberdashers Company. A memorial service was held in London in late September in St. Sepulchre's Church.

SIR FREDERICK J. WEST

SIR FREDERICK J. WEST, late chairman of West's Gas Improvement Co. Ltd., died at his home in Cheshire in November. Sir Frederick was born at Maidstone (Kent) in 1872, the second son of Mr. John West, who was then engineer to the Maidstone gas undertaking. Trained as an engineer, Sir Frederick's main interest was in the firm of West's Gas Improvement Co. Ltd., founded by his father at Maidstone in 1874 and subsequently established in Manchester in 1884. He succeeded his father as managing director and, finally, chairman of the company. Sir Frederick took a keen interest in the Institution of Gas Engineers, serving as president in 1941-42, and in the Society of British Gas Industries, of which he was chairman in 1910-11 and president in 1947-49. He was appointed C.B.E. in 1920, created Knight Bachelor in 1936 and Knight Commander of the Order of the British Empire in 1943, with promotion to Knight Grand Cross in 1947.

More advantages in Mark II SNAP-LOCK heavy duty limit switches

A TYPE APPLICABLE TO EVERY INDUSTRY

WATER
OIL
AND
DUSTPROOF
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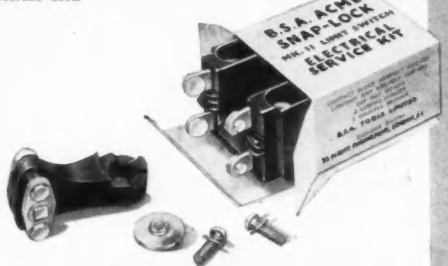
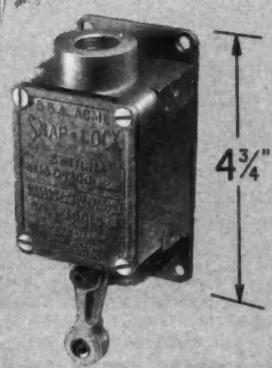
Now **TWO ONLY REPLACEABLE UNITS IN THE ELECTRICAL SIDE**

There are only two assemblies in the electrical side of B.S.A. ACME SNAP-LOCK Mk. II limit switches: a moulded one-piece contact block and the contact arm. Interchangeable on all models they are designed for easy replacement. Service kits comprising these items, complete with holding nut and fixing screws, are supplied at moderate cost.



B.S.A. Acme Snap-Lock heavy duty limit switches have an established reputation for reliability under the most arduous conditions. Recently introduced Mark II versions retain proved features of their forerunners but incorporate refinements in design and manufacture principally to simplify servicing, provide complete interchangeability of assemblies, increase electrical resistance to earth and ensure lasting efficient sealing. Please ask for the Mark II catalogue.

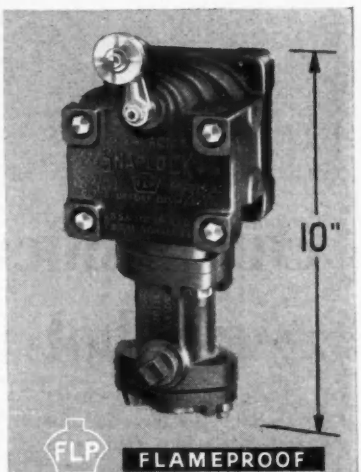


STANDARD

WATER, OIL & DUST PROOF

Single pole, double break, double throw, operates with either circuit normally open with other closed, or maintaining in either position, or available with central (neutral) position and/or centre connection. Heavy aluminium die-cast case. Water, oil and dust proof. Conduit ¾ in. B.S., or No. 3 Admiralty Pattern Cable gland entry. Two-screw side mounting or backplate mounting in two styles, or Tandem style (back to back mounting). Operating lever position adjustable in 7.5 deg. increments through 82.5 deg. either way from normal.

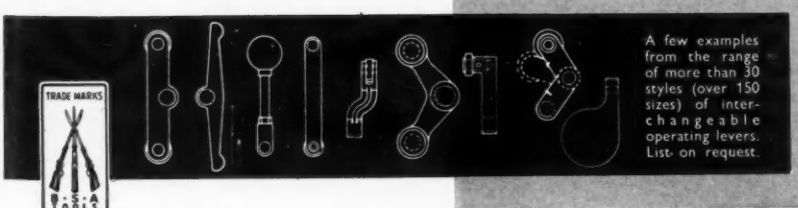
STANDARD NEUTRAL POSITION OR CENTRE CONNECTION



FLP FLAMEPROOF

SINGLE OR DOUBLE ENTRY

Buxton certificates No. 3574 (Group I) No. 3575 (Groups II and III gases). Meehanite iron castings. Self wiping solid silver contacts, interchangeable plugs and sockets. Internal mechanism removable as a unit for servicing. **Single SWA cable entry (standard); double entry if required.** *Operating lever position adjustable in 7.5 deg. increments through 360 degs. Single pole, double break, having one normally closed and one normally open circuit. Available with central (Neutral) position and/or centre connection.*



A few examples from the range of more than 30 styles (over 150 sizes) of interchangeable operating levers. List on request.

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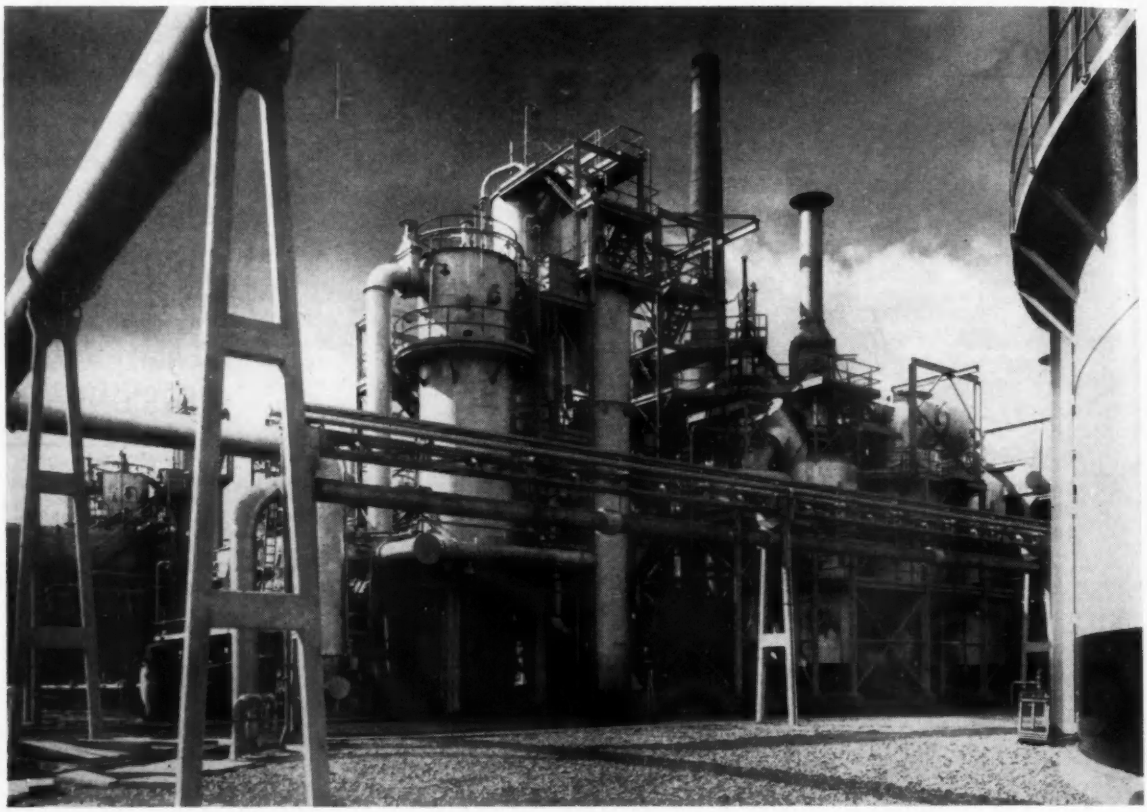
NEW PLANT, 1959



Oil gasification at the Isle of Grain —symbol of the industry's new era

THE South Eastern Gas Board's oil gasification project at the Isle of Grain represents a new conception in gas manufacture and may well be looked upon as the first concrete example of a new era opening up for the gas industry.

The site on which plant has been built needed a very great deal of preparation before it was possible for construction work to begin. A survey showed it to be roughly 7 ft. above the National Datum and it was decided to raise this to 10 ft. above N.D., to avoid the high water level of the Thames Estuary at Spring tides at 9.7 ft. above N.D. The present plant occupies about a quarter of the available site, and this section alone needed 64,000 cu. yards to raise and fill.

The oil gasification plant consists of four sets of three vessel Segas units, each capable of making 4 mill. cu.ft. per day of gas of 500 B.t.u. per cu.ft. from heavy fuel oil and 5 mill. cu.ft. per day from light distillate. This type of plant will gasify anything available from a light distillate of specific gravity of .68 to an oil of 1,000 seconds viscosity. The complete plant may be worked in two pairs with the 'blow' and 'make' periods synchronised to give as far as possible a continuous make of gas.

The gas from each unit passes to its own washbox, but the Lymn washer, carbon washer and Whessoe detarrer, are common to a pair of sets and from them the gas flows into the relief holder of 120,000 cu.ft. Two Holmes-Connersville meters measure the gas made on each gas-making cycle. When light distillate is used for gasification no tar is actually produced, but carbon is formed in its place, which must be extracted from the gas before it passes into the relief holder. The gas passes on through the naphthalene washer through the tower purifier plant, supplied by Newton, Chambers & Co. Ltd., to the Holmes-Connersville station meter where it is odorised with tetrahydro-thiophene to the main holder of 2 mill. cu.ft. capacity. Gas is pumped by two Bryan Donkin compressors (one standby) into the South London main through the new 36-in. main running along Watling Street.

The only by-products of the process are tar when using heavy oil, carbon when using light distillate and liquor from the washboxes. Carbon is recovered by allowing

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On the opposite page is a general view of the Segas plant from the works offices. The picture on the right is of the girder work above the Lymn washer, showing the hydraulically operated valves. The complicated network of oil impulse pipes can be seen.

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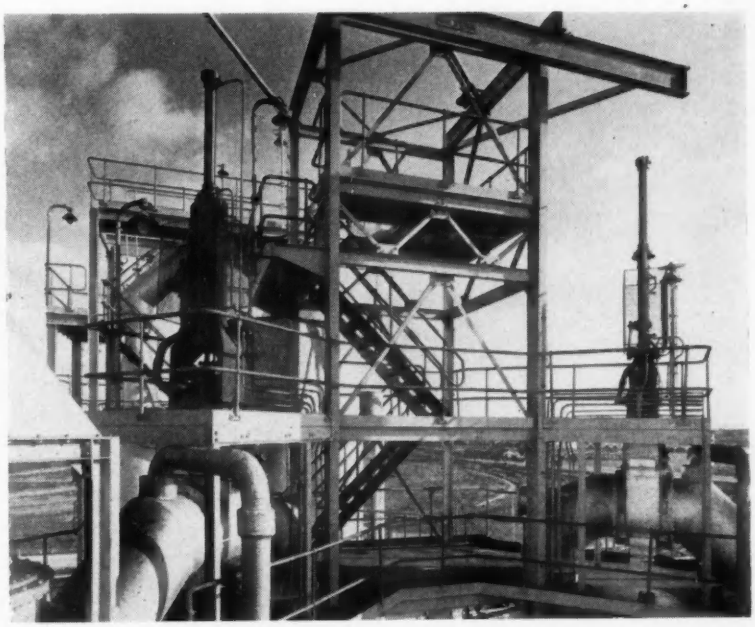


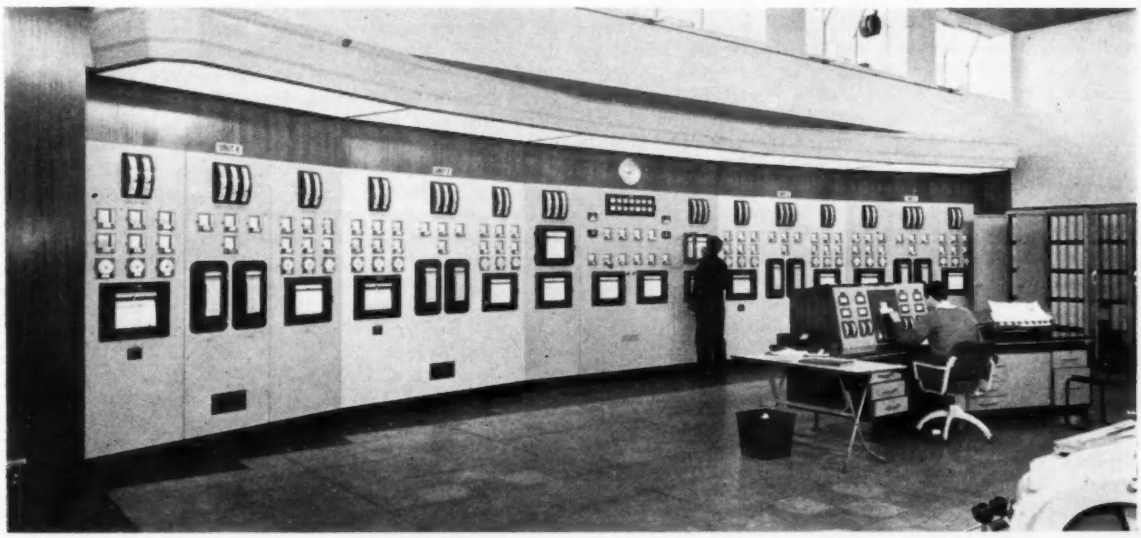
it to settle out in specially designed prestressed concrete settling tanks, formed of precast sections. There are no fuel feedstock storage tanks on the Board's site, but instead four 700,000-gal. tanks, two for light distillate and two for black oil have been built on the Kent oil refinery site and the necessary connections have been laid to ensure a constant supply of whatsoever feedstock is being used.

A feature of this works is the central control room in which all measuring instruments connected with the plant's performance are located. In here, too, are the hydraulic controllers for the Segas plant. By centralising all instruments and by making it possible to carry out all adjustments to the plant from this one point, a very great step forward in the control of gas-making plant as viewed by the gas industry has taken place. It has also made possible the running of a plant of large potential output with an exceptionally small labour force. The control room may be divided into three sections; that which contains the hydraulic controllers, one for each Segas plant; that which contains the recorders, from which adjustments to the plants performance can be made and certain rates of flow adjusted by pneumatically operated Fisher valves; lastly, the control room operator's desk on which are placed certain instruments on which his attention must be kept and from which any abnormal behaviour of the plant is immediately apparent.

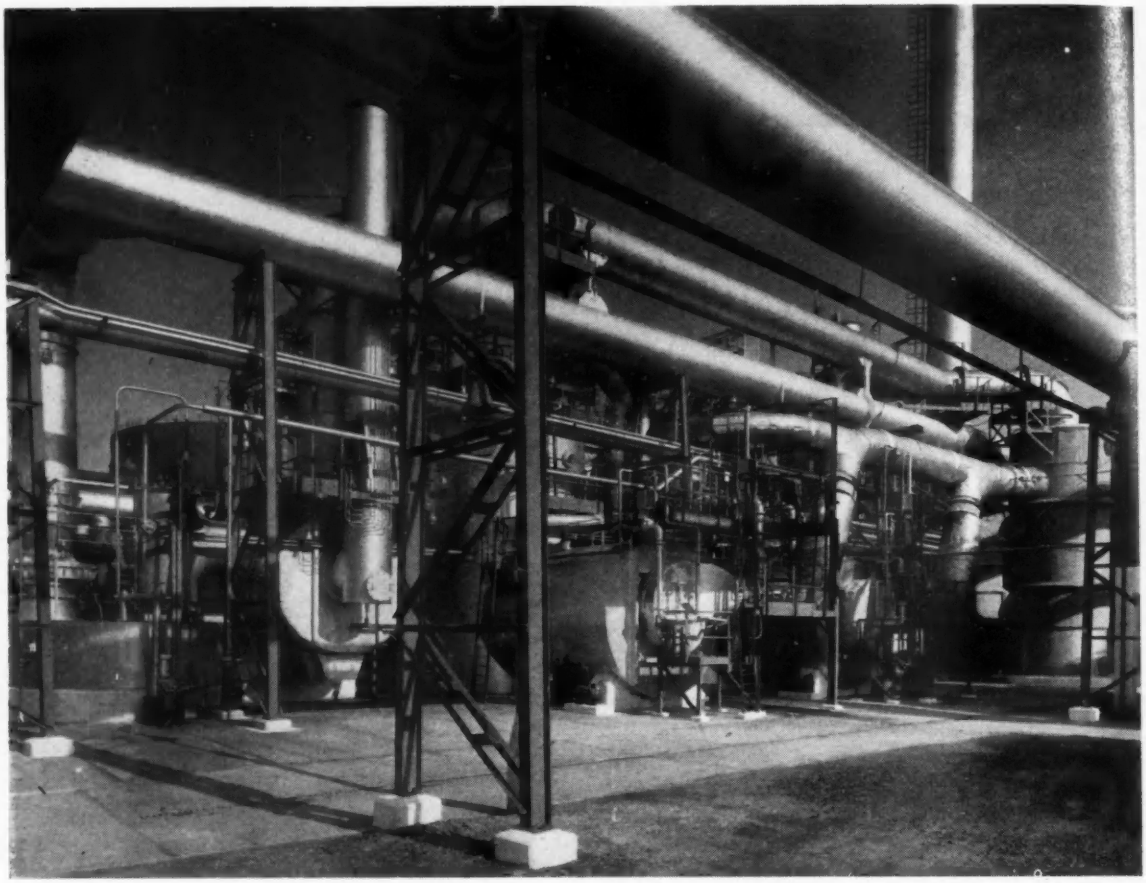
The labour force needed on this works can be kept far below that required for a carbonising plant of comparable size.

All main plant machinery, except for the main compressors, has been installed in one building.

The plant has been commissioned in sections and has given remarkably little trouble during the early stages of starting up.



Inside the control room, showing the main instrument panel and the electronic calculating equipment.



View of the Onia-Gegi reforming plant.

Romford reforms 'tail' gases and methane

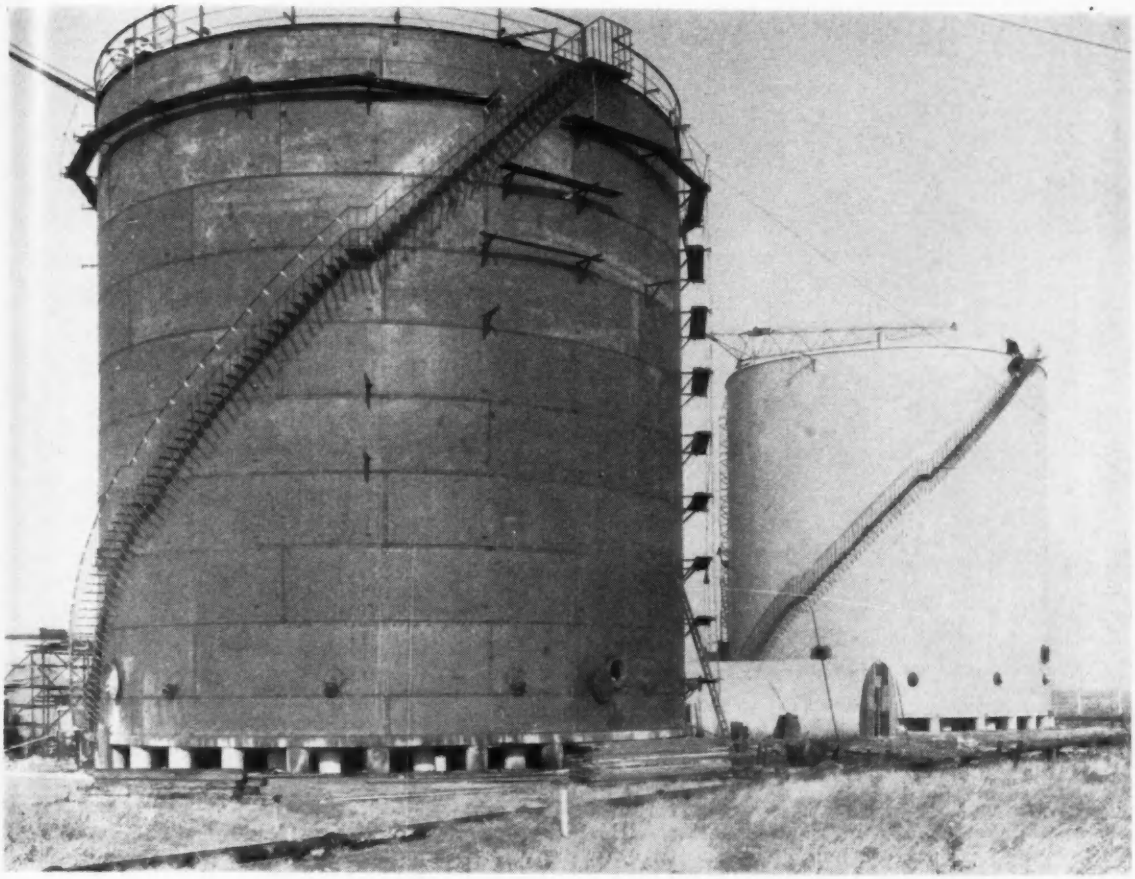
THE North Thames Gas Board's new gasworks at Romford consists of four Onia-Gegi units for the reforming of the refinery tail gases, one pair of which can also use primary flash distillate, and an oil gasification plant divided into two units and capable of gasifying any feed stock from P.F.D. to heavy oil of 1,000 seconds' viscosity. The design capacity of each reforming unit is 9 mill. cu.ft. per day, and that of the gasification plant, 2 mill. cu.ft. per day for each unit. Existing plant includes a water gas plant of modern design, which can be used to supplement supplies during periods of peak demand. With a capacity of 2.5 mill. cu.ft. per day enrichment of the water gas made in the plant is by P.F.D.

The addition of the new plant has raised the potential output of the works from 5 mill. cu.ft. per day to at least 50 mill. cu.ft. per day, since experience has shown that the actual capacity of the reforming units is far in excess of their design capacity. As much as 12 mill. cu.ft. in a day has been obtained from each of three of the units, and the Board are of the opinion that this may be exceeded.

The sources of raw material are the two large oil refineries on the north bank of the Thames Estuary, and imported methane from the storage tanks on Canvey Island. Tail gases with an inorganic sulphur content of .5 ppm. of H_2S are brought from Shell Haven by a 24-in. steel main, 15½ miles long, capable of working at 275 p.s.i. Under present conditions gas is received at Romford at 100 p.s.i. and, after passing through Blaw Knox dust filters and an Askania governor, arrives at the reforming plant at 5 p.s.i. At the maximum working pressure of 275 p.s.i., the main can store a total of 5 mill. cu.ft., equivalent to the capacity of a large conventional holder, or about one-third of a day's consumption. A proportion of the tail gases, amounting to about 10%, is used for heating the plant, and 40% is reformed to a gas of a c.v. of 340 B.t.u. per cu.ft., while the remaining 50% is used for cold enrichment to raise the calorific value of the outgoing gas to the declared value of 500 B.t.u. per cu.ft.

The tail gases received from the oil refineries contain about 5 grains of organic sulphur per 100 cu.ft., and during the reforming process, this sulphur is converted to hydrogen sulphide, amounting to about 20 grains per 100 cu.ft. Purifiers have been installed to absorb this inorganic sulphur. The purified, reformed gas then undergoes cold enrichment to raise its c.v. from approximately 340 B.t.u. per cu.ft. to the declared value of 500 B.t.u. per cu.ft. by adding untreated tail gas. The resultant gas has an organic sulphur content of approximately 3 grains per 100 cu.ft. The cold enrichment process is controlled automatically by a Sigma-Kent calorific value controller.

Gas compressed to 25 p.s.i. passes through a gas drying plant on its way to the London grid main. The drying plant makes use of a solution of calcium chloride maintained at a specific gravity equivalent of 80° Tw.



The two 1,000-ton storage tanks at Canvey Island.

Liquid methane trials an engineering feat which may point towards cheaper gas

THE first stage in the project was the safe arrival in this country of the 3,000-ton Methane Pioneer with its cargo of liquid methane. One significant aspect of this trial voyage was that it has been completed under weather conditions as bad as can normally be expected.

The Pioneer is capable of a maximum speed of 11 knots and averaged 9 for the voyage. She is a double-bottomed vessel approximately 340 ft. in length, reported to have been equipped with specially designed and fabricated tanks, of substantially rectangular shape, having a total capacity of 2,200 tons of liquid methane.

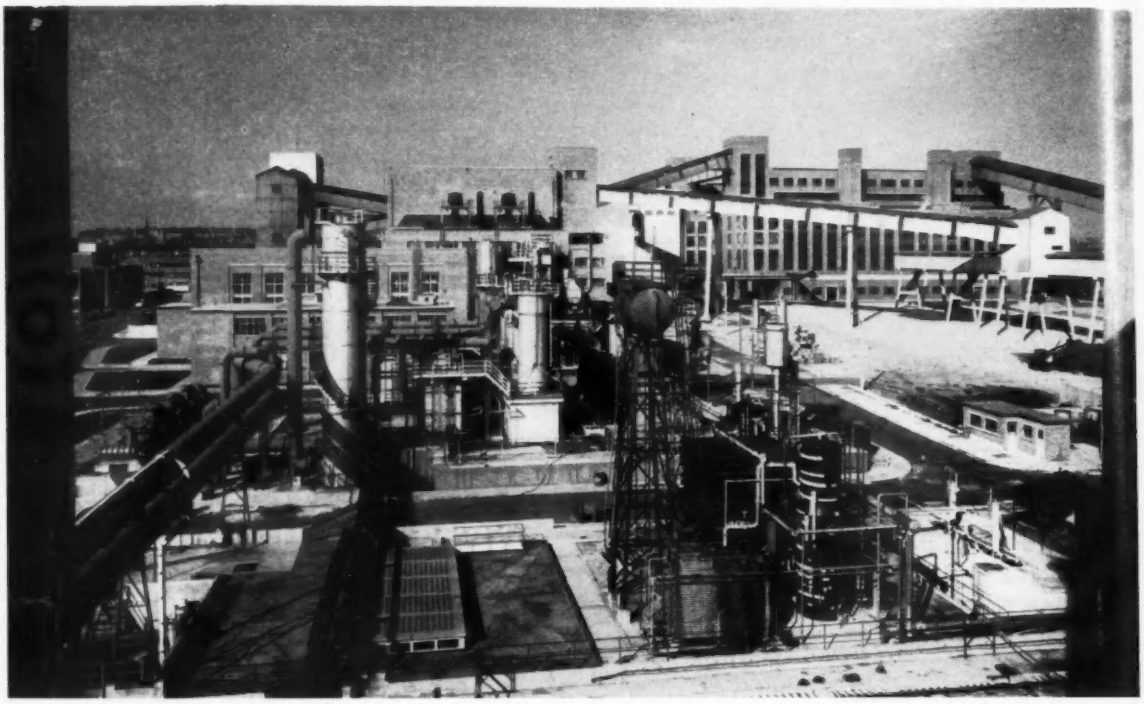
Unloading took between a week and ten days. The job was carried out sufficiently slowly to permit testing at each stage and on this occasion the cooling process was particularly slow. After the next trip it can be carried out much more swiftly because there will be cold methane already in the tanks. In any case the process of pumping is quicker than that of cooling.

The tanks in the Methane Pioneer are aluminium with a 12-in. insulation of laminated balsa wood and an outer jacket of steel. Each of the land storage tanks at the Canvey Island terminal has a capacity of about 1,000 tons of liquid natural gas. The design of the tanks, which was determined by the Board in conjunction with the firms concerned, employs large-scale aluminium fabrication and field welding which has been radiographed throughout; the tanks are among the largest aluminium vessels of this type to be built in Britain.

Although these shore storage tanks are heavily insulated there will be a continuous boil-off of gaseous methane from the liquid, and this material will be contained in a small gasholder of the dry-sealed Wiggins type, whence it will be pumped into the mains system.

Liquid methane will be vaporised by heat exchange with water or steam, and there is no intention at this stage of making use of the cold content or the refrigerating capacity of the methane. The liquid methane will, of course, be converted to gas under pressure, and this pressure will be used to convey the gaseous methane into the Board's transmission lines.

The trials now taking place are in the nature of an economic exercise to determine whether and in what way the importation of liquid methane might be used to produce cheaper gas in the North Thames area and in Britain as a whole.



Pleck works, Walsall, has new conventional plant raising capacity to 18 mill. a day

THE commissioning of the new plant at the Pleck works at Walsall in Staffordshire has increased its potential gas-making capacity from 4.75 mill. cu.ft. per day to a total of 18 mill. cu.ft. per day. It comprises four benches of 24 Woodall-Duckham lambent-heated continuous vertical retorts, and two Humphreys & Glasgow carburetted water gas plants.

Before work on the new plant could be started, certain civil engineering work was necessary. To make full use of the available area, four terraces were constructed and individual plant units so arranged that coal should be brought up from the sidings at the lowest level to the retort houses on the top level or to stock at an intermediate level, and liquids produced by the plant for storage or despatch, or effluents for disposal, should flow by gravity to suitable points at lower levels. The works sidings have been considerably extended and can now hold a sufficient number of wagons to confine coaling to eight hours' work per day by day-men.

Coal stocking

The transport of coal and coke is a feature of this works and a very complete system of belt conveyors has been installed by which coal can either be carried direct to the retort house bunkers or put into stock. Stocking or recovery from stock is by means of a drag scraper of 4½ cu. yards capacity capable of handling 150 tons of coal per hour. The stocking ground will hold 27,000 tons or about six weeks' supply.

Coal is carried by 30-in. twin belt conveyors to the No. 1 retort house from which it will either be taken by shuttle conveyors to the retort house bunkers of 48-hours' capacity or be carried on to the No. 2 retort house by similar twin conveyors to storage bunkers of similar capacity and fitted with similar handling gear.

From hand-operated, water sealed discharge doors, coke is guided by hand-operated travelling coke chutes on to one of two 20-in. belt conveyors working in a trench below the retort house floor level, and travels at the rate of 40 tons per hour to the coke grading and screening plant.

The new screening plant with a storage capacity of 600 tons will grade to 2 in. and over (150 tons), 2 in.-1¼ in. (180 tons), 1¼ in.-¾ in. (150 tons), ¾ in.-⅜ in. (60 tons) and to below ⅜ in. (60 tons).

Coke may be stocked outside, near No. 1 retort house, and about 3,700 tons may be held here. A reinforced concrete structure supported on legs, carries a transverse 30-in. conveyor which distributes the coke evenly over the stocking area. Larger stocks may be held outside the works area.

In the No. 1 retort house is a mimic diagram in red and green lights, showing what belt conveyors are running, and the route being taken by any material being carried by them. The conveyor drives are by squirrel-cage electric motors and, where it is warranted, hydraulic couplings have been installed. The sequence starting of all motors is used and minimum belt speed where hydraulic couplings are installed, below which the motor is switched off, is also included as a safety device. Motors may be stopped by wire-cable operated switches running parallel to the conveyors themselves.

In each retort house there are two benches each of 24 82-in. lambent-heated continuous vertical retorts with a combined output of over 6 mill. cu.ft. per day of coal

★

Interior of the retort house at producer charging level. A battery of step grate producers can be seen in the left background together with the overhung charging skip. Producer gas connections to the retorts appear on the right.

★

gas of a calorific value of 450 B.t.u. per cu.ft. The retorts are in double line and each is controlled independently. Each bench is divided up into six sections of four retorts to facilitate repairs. Producer gas for retort heating is supplied by batteries of hand-cleaned step grate producers on the retort floor level.

There are three waste heat boilers in each retort house, one for each bench and one standby. The Sirocco fans providing induced draught are electrically-driven, steam turbines being kept as standby. All steam used on the works is raised by waste heat boilers both in the retort house and at the carburetted water gas plant. No solid fuel boilers have been installed. A water softening plant employing lime milk, soda ash and sodium aluminate, is housed in a building situated between the two retort houses.

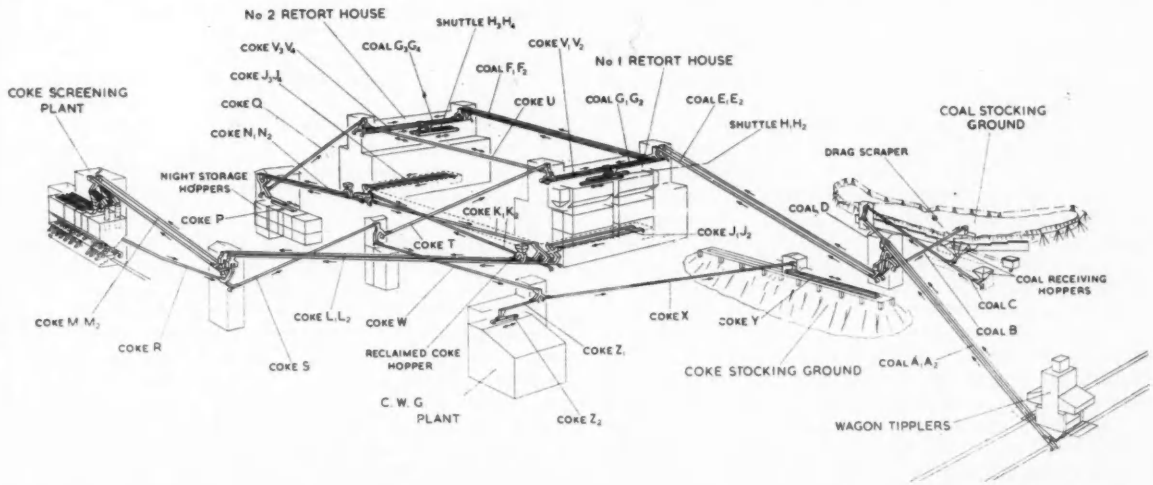
The gas leaves the retorts through liquor sprayed offtakes and enters the collecting main running alongside each retort bench. It then passes to the hot gas detarrers, each with a capacity of 4 mill. cu.ft. per day working at an efficiency of 99.5 ± 5%.

From the detarrers the gas passes through the primary coolers to the three Holmes-Connersville exhausters, each of 6 mill. cu.ft. per day capacity and each capable of dealing with the gas from one retort house. In addition there are two steam-driven, 6 mill. cu.ft. per day Holmes-Connersville machines, one standby, for carburetted water gas. In the exhauster house, too, which is a spacious, well-designed building, are the gas compressors, two vertical, steam-driven, Bryan Donkin machines with a capacity of 100,000 cu.ft. per hour operating at 25 p.s.i. Duplicate Holmes-Connersville compressors of 150,000 cu.ft. per hour capacity, operating at 5 p.s.i.—one an electrically- and one a steam-driven machine, supply the Aldridge area.

Remaining ancillary plant

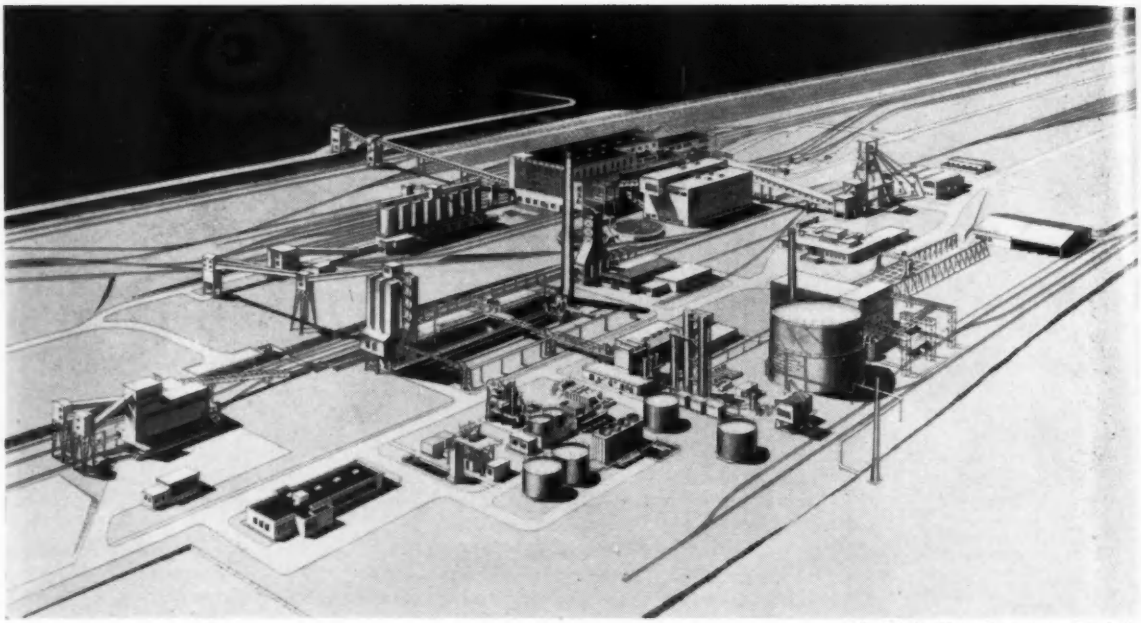
From the exhausters the gas passes to the remainder of the ancillary plant which it enters in two separate streams, though the capacity of the plant is big enough to take the combined quantity of the two coal-gas streams through any one part of the plant if needed.

An unusual feature is the provision of a Holmes-Connersville meter for each stream of unpurified gas as well as for the purified gas entering the holders. There are six meters altogether; one to measure blue water when required, two to measure unpurified coal gas, two measuring purified gas and one measuring the c.w.g. stream. In this way thermal loss due to purification can be measured.



Woodall-Duckham Construction Co. Ltd.

Perspective drawing of the coal and coke handling plant. The route of the coal can be traced to its various destinations from the tipplers and the various routes open to coke from and to the retort house can be seen.



Woodall-Duckham Construction Co. Ltd.

A perspective wash drawing of the Murton works.

Murton—latest of four major N.C.B. coking plant projects in the Durham division

THE new Murton coking plant in the Durham Division of the National Coal Board is the latest of four major coking plants to be completed in this Division since nationalisation.

The capacity of the new carbonising plant is 1,000 tons of coal a day, equivalent to a production of 250,000 tons of high-grade metallurgical coke a year, together with some 7.5 mill. cu.ft. of gas a day made available to the Northern Gas Board. By-products include concentrated ammonia, tar and the production of about 1 mill. gal. of crude benzole annually.

Crushing and blending

The complete installation includes a comprehensive crushing and blending plant with a storage capacity of 3,200 tons.

At the hopper outlet of each bunker there is a rack and pinion operated door through which the coal is discharged to a travelling constant weight belt feeder.

Each capable of handling from 15 to 80 tons of coal per hour, they feed coal on to a 30-in. belt conveyor which transports it to the coal crusher house. Here a 72-in. flat belt conveyor delivers it into the crusher.

The crushed, blended coal travels on a 42-in. belt conveyor to a transfer station and is delivered by a 30-in. belt to the coke oven service bunker.

In a dust-free air conditioned room underneath the blending bunkers is the coal handling plant control desk. Here an illuminated mimic diagram panel gives the operator all the information he needs for the running of the plant, from the delivery of washed coal to the blending bunkers, to its final discharge into the coke oven service bunker.

The carbonising plant consists of two separate batteries, each of 25 ovens, of the W-D Becker combination underjet type which can be fired either by rich coke oven gas, or by producer gas, should the necessary plant be installed later. Each oven is 40 ft. 9¾ in. long between the doors, 13 ft. high, with an average width of 18 in. and is built of first-class silica from the pad upwards, except for the regenerator filling, the oven soles and the end walls adjacent to the pinion walls, which are of fireclay. The regenerator facings and oven top are insulated.

The battery control room is at bench level at the coal bunker end of the batteries. At this end of the batteries, too, space has been left for building additional carbonising plant at some future date, should the demand for metallurgical coke from this works increase.

The oven service bunker, constructed of reinforced concrete and approximately 138 ft. high, has a total capacity of 2,200 tons of washed crushed coal; contained in it is a separate compartment of 700 tons capacity which can be used for storing coal for experimental purposes.

The pusher is a combined machine which travels the length of the batteries. Separate electric motors are provided for each operation and the pusher driver seated in a special armchair unit, controls all these operations with considerable ease and freedom from strain or fatigue, a most important consideration when a long, uninterrupted pushing schedule is being undertaken. Pushing is controlled by the W-D Gamma interlock system which depends upon a beam of gamma rays passing from the coke guide to the pusher machine through the space above the charge. There is a ram changing station at the chimney end of the battery where a spare ram and leveller are kept available.

The quenching station, of the recirculation type, consists of a reinforced concrete, brick-panelled wind shield and a timber tower rising 110 ft. above rail level.

The coke oven doors must be sealed with clay lute before the oven is recharged. A conventional mortar mill is used to grind the clay mixture for making the lute and

two electrically-operated clay lute carriers, running on rails, one on each side of the ovens, considerably ease the work of the operators and ensure efficient luting.

After quenching, the coke is discharged on to the coke wharf. From here the 36-in. coke wharf conveyor delivers it at 75 tons per hour to a second 36-in. belt conveyor which, in turn, elevates it to the coke screening station. From the primary screen, a single deck vibratory screen separating all coke above 2½ in., there are two courses open to the oversize; it is delivered by chute either to a 36-in. belt conveyor and so to the 42-in. 'large coke' boom loader for loading to railway wagons, or alternatively to the coke cutting machine. This can deal with 50 tons per hour and reduces it to below 2½ in.

The undersize coke, together with that from the cutter, or run-of-oven coke from a chute by-passing the primary screen is carried by three 36-in. conveyors in series via two transfer stations back to the screening station, where it is delivered either direct to the secondary screens or first to a secondary coke cutter. At the secondary screens, the following sizes are separated and stored in their respective bunkers: Breeze (0 to ⅜ in.); ⅜ in. to ⅝ in.; ⅝ in. to ¾ in.; ¾ in. to 1 in. and 1 in. to 1½ in. The building housing the screening plant and storage bunkers is a steel-framed structure clad with asbestos-cement panel sheets.

The screening plant is equipped with a complete dust extraction unit, by which coke dust is extracted from all the various screens and chutes, and conveyed by a ducting system to a Rotoclone and subsequently hoppered. Like the coal handling plant, the coke handling and screening plants are centrally controlled. The intricacies of this control are more exacting and probably demand even clearer thinking on the part of the operator. The control desk, to which all the necessary information is brought and from which the operator can set in motion the different sections of the plant under his control, has been placed in a dust-free, air conditioned room with windows on all sides, located above rail level.

The crude gas leaves the ovens through ascension pipes on the pusher side and passes to two collecting mains, one for each battery. There are three primary condensers, one standby, with provision for a fourth at some later date.

There are two turbine driven, two-stage, double flow exhausters—one as a standby—supplied by Richardsons Westgarth Ltd. Each has a maximum capacity of .874 mill. cu.ft. per hour, delivering against a pressure of 2 p.s.i. and are big enough to deal with extra gas made in any proposed future extensions of the carbonising plant. They are direct-coupled to high-speed impulse steam turbines operating at 150 p.s.i. and exhausting against a pressure of 15 p.s.i.

Information panel

In a slightly pressurised room in the exhaust house a graphic panel, some 40 ft. long, provides minute-by-minute information on the flow of coke oven gas, producer gas, ammoniacal liquor, tar, benzole, wash oil, water, steam and air, and most of the operation of the plant is controlled from here. It consists of a central graphic section with wing panels at each end. It employs some 80 controllers and recorders, together with pilot indicator lights, alarm signals and other devices.

On the graphic panel the representation is arranged horizontally, with the main gas stream shown moving from left to right. The indicating and recording instruments are actuated by pneumatic signals received from field-mounted transmitters situated at the requisite measurement points on the plant. On the right hand wing is presented essential budgetary control information which falls outside the scope of the graphic presentation. On the left hand wing there are two key switch potentiometers, a multiple column mercury manometer, and an annunciator board which forms part of the comprehensive alarm system. The potentiometers make it possible to take additional temperature readings at points where continuous readings are not required, while the multiple columns of the manometer show clearly and compactly the progressive changes of pressure in the gas purification system, which are recorded by pressure transmitters installed throughout the system.

Leaving the exhausters, the gas enters the electrostatic detarrers. There are three Whessoe W-D detarrers of the vertical tube and suspended wire electrode type, each 6 ft. 6 in. in diameter. To cool the gas before the ammonia washers and for naphthalene removal, it enters the secondary cooler, in which the cooling medium is petroleum oil.

The cooled gas passes to three Whessoe ammonia washers operating in series, any one of which may be bypassed and the normal gas load handled efficiently by the remaining two. All liquor is pre-cooled by four floating-head liquor coolers before entering the washers.

Benzole stripping

The benzole-enriched wash oil is stripped of its benzole, in the crude benzole plant. The benzole so obtained, after cooling, is passed to a water separator and thence to a 300-gal. running tank. From here it is delivered by a 500-gal. per hour centrifugal pump to the carbon disulphide stripping column, after which the treated benzole runs into a 12,000-gal. running tank divided into two equal compartments. Should the CS_2 still be temporarily shut down the crude benzole can be returned by suction line to the still. Finally, the benzole, free of CS_2, is stored in two 50,000-gal. tanks from which it can be loaded into rail or road tanks. The carbon disulphide recovered in the still passes through a floating head condenser to a decanter and flows to a drumming tank of 2,000-gal. capacity fitted with a steam coil. The gas stripped of benzole passes to the single-lift, spirally-guided gasholder of 200,000 cu.ft. capacity.

Gas not required for underfiring the coke ovens or at the boiler plant is diluted with producer gas to a calorific value of 485 B.t.u. per cu.ft. for distribution by the Northern Gas Board.

The purifiers with a maximum capacity of 10 mill. cu.ft. per day consist of five welded steel boxes, built as one unit and containing 24 trays in six tiers.

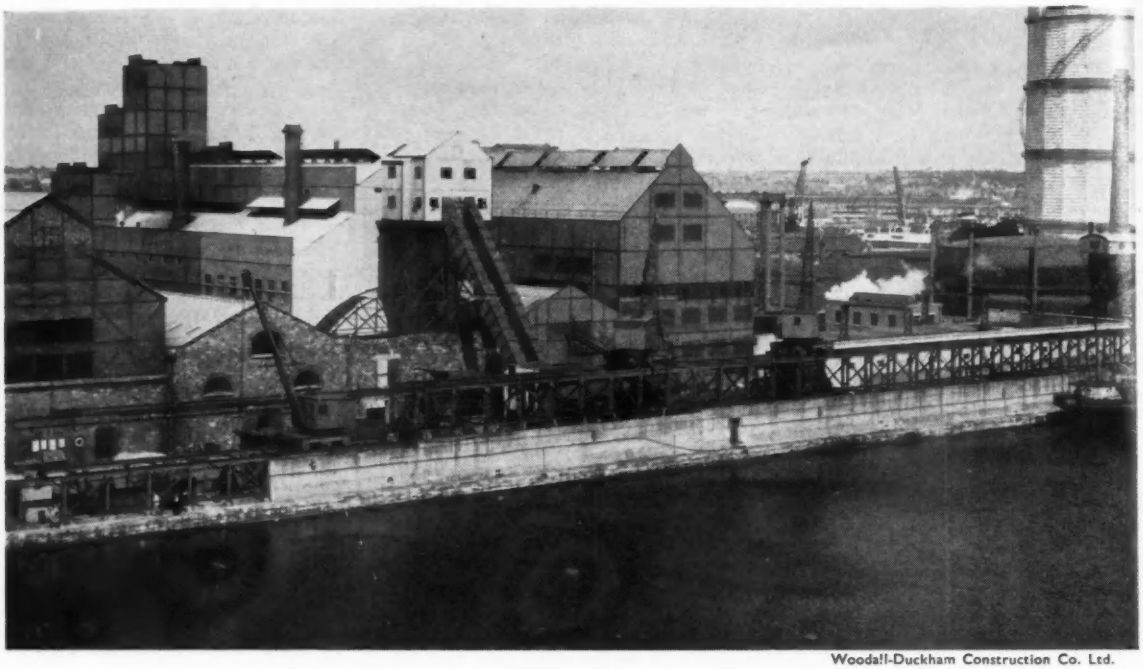
An official testing room for the maintenance of the declared calorific value of the distributed gas is also included in the main by-product building.

Producer gas for dilution is made in two 4 ft. 11 in. diameter Gibbons-Heurty H.W.J. 18 gas producers.

The works water cooling plant consists of two independent, closed circulating systems, each complete with a cooling tower, cold wells and the necessary suction and delivery water piping.

In addition to the boilers and the turbo alternator, water treatment and evaporator plants have been installed at the works generating station. Raw water from the sand feeder on the site is treated in a fully automatic John Thompson-Kennicott lime precipitation water treatment plant and filter battery. With a capacity of 160,000 lb. of water per hour, it supplies some 100,000 lb. of water per hour as make-up water to the cooling circulation system, the remainder, to be used as boiler feed water, passes through a base exchange unit, equipped with a polystyrene head resin bed and on to the 'fully treated' water storage tank.

There are three stoker-fired boilers, each with a steam raising capacity of 20,000 lb. per hour at 615 p.s.i. and 815°F. They are of the Bi-Drum type and will fire coke oven gas at times of low gas demand in addition to the South Hetton smalls burned on the chain grates.



Woodall-Duckham Construction Co. Ltd.

A view of the works showing the location of the new plant.

NEW BENCH OF RETORTS AT DUBLIN WORKS

THE newly-completed bench of 24 continuous vertical retorts is designed to increase the capacity of Dublin gasworks by 3 mill. cu.ft. a day.

Replacing the last of the horizontal benches, the new plant occupies No. 6 retort house which has been greatly altered, and is a continuation of a Glover-West plant. Where possible old walls have been retained, additional building being carried out by raising their height with steel-framed brick panelling. Some new mass concrete foundations, however, have been laid down, reinforced by bar where necessary.

Individual shut-down

The 82-in. lambent heated c.v. retorts are set in double line complete with step grate producers, a new chimney and a waste heat boiler. Settings are of the orthodox Woodall-Duckham design in high grade silica. The retorts are heated by producer gas from four step grate producers built in an independent battery at retort house floor level on one side of the bench. Gas from any producer can taken to the flues of any retort. The producers are 6 ft. 4½ in. wide by 7 ft. 1½ in. deep with sufficient grate areas to heat 24 retorts when burning run-of-retort coke and any one can be shut down without interfering with the others.

The waste heat boiler, of the multi-tubular fire tube type, is 5 ft. 9 in. in diameter by 15 ft. long with a heating surface of 1,287 sq.ft. It raises steam at 120 p.s.i. An electrically-driven Sirocco induced-draught fan, big enough to deal with all gases from the retorts, draws the waste gases through the boiler and discharges them through the chimney—a brick-lined steel structure 103 ft. high. The top 15 ft. of the chimney is lined with acid-resisting bricks set in Prodor cement; the remainder with firebrick, the lower part 9 in. thick and the upper 6 in.

Coal is brought by existing unloading and handling equipment from boats at the canal quay to duplicate 42-in. belt conveyors—one standby—of 100 tons an hour capacity. These serve the Glover-West No. 5 retort house and also feed the coal bunker above the new retort bench, which holds sufficient coal for 48 hours' working at a throughput of 8.1 tons per retort per day.

Coke is discharged at the base of the retort by hydraulically-operated extractors into cast iron ancillary hoppers holding two hours' make of coke. Extractor driving equipment consists of two 3-in. diameter hydraulic cylinders and pistons, connected to two lines of reciprocating bars, each extending on one side of the bench. Cast iron adjustable driving blocks engage rocking levers mounted on the coke extractor wheels.

Two pumping sets, one standby driven by constant speed motors, are contained in a cabinet at floor level.

On two 30-in. belt conveyors, which have been extended to pass under the new bench, coke is directed by a hand-propelled travelling coke chute and passes to the coke grading plant.

Tar and liquor separation

A 15-in. uptake main from each collecting main is coupled to an 18-in. foul main from which a 16-in. branch connects it to a relief and purge pipe. From the foul main gas passes through a butterfly valve working in conjunction with a Bryan Donkin gas relay type gas regulator, to an existing 30-in. suction main. Tar and liquor from the collecting mains is passed to a mild steel separating tank with a decanting compartment of 2,100 gal. capacity and a clean liquor compartment of 400 gal. capacity.

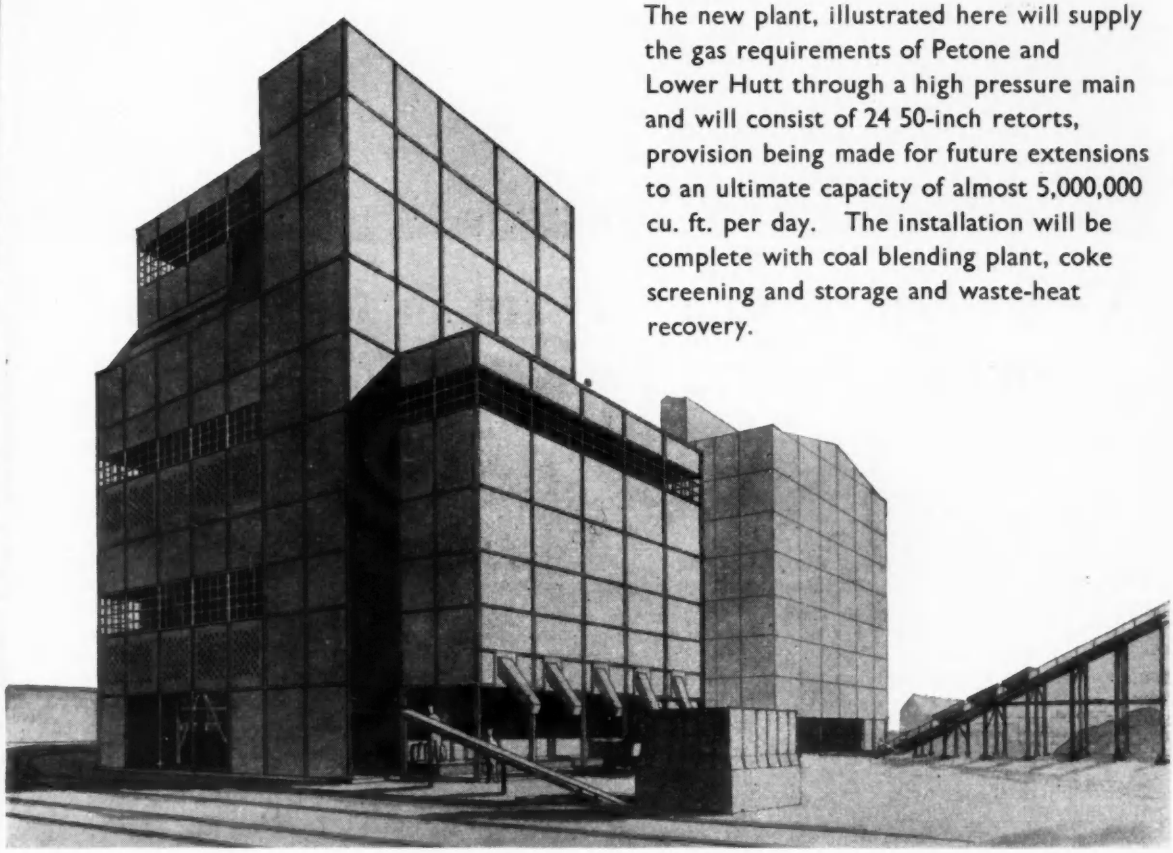
Of the total output of the Dublin works 80 mill. cu.ft. a week is coal gas. The other 35 mill. is water gas from four 2½ mill. cu.ft. a day Humphreys & Glasgow plants.

West's

NEW PLANT FOR WELLINGTON N.Z.

Work has now begun on the foundations for a new 1,600,000 cu. ft. per day installation of Glover-West continuous vertical retorts at the Miramar Gasworks, Wellington, New Zealand, where Glover-West plant with a capacity of 4,800,000 cu. ft. per day is already in operation.

The new plant, illustrated here will supply the gas requirements of Petone and Lower Hutt through a high pressure main and will consist of 24 50-inch retorts, provision being made for future extensions to an ultimate capacity of almost 5,000,000 cu. ft. per day. The installation will be complete with coal blending plant, coke screening and storage and waste-heat recovery.



WEST'S GAS IMPROVEMENT COMPANY LIMITED

MILES PLATTING, MANCHESTER, 10 *Tel: COLlyhurst 2961 Grams: Stoker, Manchester*
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W1

Cwm plant a step forward in Coal Board's coke production plans for South West

THE commissioning of the new coking plant at Cwm, near Pontypridd in Glamorgan, is a further step forward in the completion of its plans for greater coke production in modern plant by the South Western Division of the National Coal Board.

The site on which the new works was to be built was a narrow shallow valley, running north and south at a height of approximately 400 ft. above sea level, and about 200 ft above the town of Pontypridd about four miles away. The colliery is situated at the northern end of the valley and the new coal washery adjoins it. It was necessary to carry out a considerable amount of civil engineering work to adapt the site before the works could be built. This took the form of four levelled terraces, three on the west side and one on the east side of a main road constructed to run through the centre of the completed works. To facilitate the calculation of the levels and to assist in reducing excavation work to a minimum, a sand model was made of the site and was used in the discussions and planning of the works.

A problem which had to be faced when this site was chosen was the supply of water to the new works, since it is not self supporting in this respect. It was solved by utilising the water normally pumped from three collieries in the vicinity.

The carbonising plant consists of four batteries grouped in two pairs, each of 27 ovens and divided by a single coal service bunker placed centrally. The ovens, of orthodox design, are the Simon-Carves underjet, compound type with a single waste gas flue.

A total throughput of between 1,350 and 1,530 tons of coal a day can be carbonised depending on the carbonising time.

Askania governors control the rich gas pressure, the chimney draught and the collecting main pressure. The burning gas is preheated to 45°C. to avoid its temperature falling below its dew point, and its flow is measured and integrated.

Twin collecting mains have been installed in accordance with modern practice with an Askania control governor for each main.

Coal for carbonising comes from the adjoining Cwm colliery where it is washed in a Chance washery to an ash content of between 4½ and 5%. Included at this washery is a mineral separation type plant which, by the use of oil, will effectively wash very small coal down to these low ash contents. The coal with a volatile content of 22.5 to 23% is brought by belt conveyor to four cylindrical blending bunkers. At present blending is being carried out, and these bunkers with a capacity of 2,000 tons of coal are being used for coal storage. From here it passes to a British Jeffrey-Diamond pulveriser of 160 tons per

hour capacity where it is reduced to a grading of 90% through ½-in. mesh. The total amount of coal needed amounts to 9,500 tons per week. All coal is weighed before charging by means of Avery weighers incorporated in the rail track.

To ensure perfect alignment between the pusher machine and the coke guide on the one hand, and the correct positioning of the coke-car on the other, a special electro-magnetic device has been installed on all four batteries.

Door changing and repair stations are provided on each pair of batteries. The provision of a device for turning the door over while still keeping it in a horizontal position saves much time and great deal of unnecessary handling. All doors are of the latest Wolf self-sealing type.

Coke, with a moisture content of about 1½%, is carried by a 42-in. belt to the screening plant and passes over a 3½-in. Grizzley screen. The oversize, foundry coke, is boom loaded into railway wagons, or into lorries for transport by road to the Midlands, by which means this works despatches about 1,800 tons a week. The coke passing through the Grizzley screen is taken to secondary vibrating screens for sizing for domestic use.

The gas from all four batteries is brought by a common foul main of 48 in. diameter to the ancillary plant. There are four primary condensers of the indirect type, each provided with five gas and five water passes. Their capacity as with all the ancillary plant installed at this works, unless otherwise specified, is .7 mill. cu.ft. per hour, which is equivalent to a throughput of 1,530 tons of Cwm coal per day.

Gas temperature is controlled by air operated Fisher valves so that it remains constant at 35°C. at the outlet of these condensers. There are two 3-stage turbo exhausters driven by 2-stage steam turbines running at 5,900 r.p.m.

There are three electrostatic detarrers, supplied by Simon-Carves Ltd., which are capable of reducing the tar content by 99.5 ± .5% or to an actual content of .6 grains per 100 cu.ft.

Ammonia plant

The ammonia plant is of the Simon-Carves evaporative type. An absorber, a simply designed bubble-hood tower with two effects and made of Monel metal, absorbs the ammonia in the gas passed through it by dilute sulphuric acid pumped on to the top tray. It flows counter-current to the incoming gas. The acid circulation rate and the amount of fresh acid added, is adjusted so that the bleed-off consists of a concentrated solution of ammonium sulphate just below saturation point. This solution can be stored and pumped to the evaporator as required. The water is driven off from the solution and the sulphate crystals produced are pumped to a centrifuge; from here the separated liquor returns to the circulating system. The 'whizzed' crystals are then handled in the normal way.

After leaving the ammonia absorbers, the gas, the temperature of which has risen to about 48°C. passes to he secondary coolers, which are of the direct splash bar type.

The three benzole scrubbers are the conventional type packed with wooden grids and the washing medium is B.A. oil. Working in series, recirculation is practised in the first and second while the oil and gas pass counter-current to each other in the third. The benzolised oil is pumped to a completely automatic Simon-Carves benzole recovery plant and the cooled stripped oil returned to the scrubbers. The crude benzole recovered amounts to 2.5 gal. per ton of coal carbonised.

After leaving the benzole scrubbers there are four courses open to the gas. It may return to the coke oven batteries as rich gas for oven heating, pass to the works power station for steam raising, pass to the purifiers before entering the Wales Gas Board's grid main, or, if the pressure in the main rises due to lack of demand from any of these destinations, a valve to an automatically ignited bleeder flare allows gas to be blown off to atmosphere. The demand for rich gas to the oven batteries amounts to approximately 40% of all gas made. Gas for sale to the Wales Gas Board passes to a booster plant where its pressure is raised to overcome the back pressure from the purified gas holder, amounting to 16 in. w.g. on the top lift, and any possible additional back pressure from the purifiers.

Rotation of purifier boxes

The purifiers, with a capacity of 10 mill. cu.ft. per day, are of the tray type supplied and consist of five boxes in line. A gas heater installed before the boxes can raise the temperature of the in-going gas through 50°F.; every box has an individual fitting for direct steam and water connections. Air to the boxes for revivification *in situ* is supplied by Rateau type blowers capable of delivering 20,000 cu.ft. of air per hour. The purifier boxes are rotated every 24 hours and all valves are protected by water seals.

The gas passes to the purified gas holder, of 1 mill. cu.ft. capacity, and thence through a Holmes-Connersville station meter of .75 mill. cu.ft. per hour, fitted with P.V.T.T. equipment.

There are five Bryan Donkin vertical compressors, all electrically driven through a gas tight partition. Of the five, two have a capacity of 2 mill. cu.ft. per day each with a variable speed drive, and three are of 4 mill. cu.ft. per day capacity working at constant speed. To keep a check on the calorific value of the gas leaving the works, a Fairweather recording calorimeter has been installed in the gas testing house. The declared calorific value of the gas is 490 B.t.u. per cu.ft. Under present operating conditions, rich gas is being burned for oven heating, making available approximately 8 to 9 mill. cu.ft. per day for sale to the Wales Gas Board for town gas distribution. Should the demands of the Board increase, more gas can be made available by the use of producer gas at the coke ovens. Although provision has been made in the plant layout for building the necessary gas producers and any necessary ancillary plant, their actual installation has been deferred. The selective burning of rich gas or producer gas at one or all of the batteries should make the plant extremely flexible in gas production.

To provide steam for the works and at the same time thermally integrate the whole project, an electricity generating station has been built at the south end of the works. Steam is raised in Simon-Carves water tube boilers, fitted with chain grate stokers. These boilers can be fired by unpurified gas, coal, a coal/coke breeze sandwich or any suitable combination. Steam is raised at 450 p.s.i. for driving the turbo-generators and is passed out at 130 p.s.i. into the works high pressure steam range operating at 120 p.s.i., from which it is taken to the turbo-exhausters. Pass-out steam from these machines enters the works low pressure system, which after saturation by desuperheating equipment is used for process work and space heating in the works, the colliery and the local offices of the N.C.B.

A means of destroying any residual tar acids and thiocyanates present in the effluent liquor by bacteria has been worked out. The resultant liquid passing into the local brook conforms in every respect to the demands of the local river board.

Throughout the works, the maximum use is made of electrical power and where necessary fluid drives have been installed. Electric power generated at the works power station is fed into the N.C.B. grid. As a further standby the power station can supply power solely to the works and the adjacent colliery.

1960 STATE PLAN FOR RUSSIAN FUEL SUPPLY INDUSTRY: RADICAL CHANGES AND 'NO FUEL SHORTAGE'

IN his report on the 1960 State plan for development of the national economy at the third session of the U.S.S.R. Supreme Soviet recently, Mr. Alexei Kosygin, Vice-Chairman of the U.S.S.R. Council of Ministers and Chairman of the U.S.S.R. State Planning Committee, said that the policy adopted to bring about a radical change in the country's fuel pattern will make it possible to end the fuel shortage, satisfy all requirements completely, and create the necessary reserves.

Giving details of the policy for development of the fuel industry, Mr. Kosygin said that the pattern of fuel supply will be improved, in accordance with the decisions of the 21st Congress of the C.P.S.U.

Oil production in 1960 will increase by 15 mill. tons, to total 144 mill. tons. The amount of gas extracted will increase by more than a third, and be over 53,000 mill. cu. metres. More oil products will be put out. The output of light oil products will go up by 9.3% in 1960, including a 15% increase in diesel fuel.

Substitution

The share of oil and gas in the country's fuel balance will rise from 35.3% to 38.7% in 1960. The substitution of natural gas and oil products for coal will save several thousand mill. roubles for the national economy. Next year, said Mr. Kosygin, the national economy will have no fuel shortage and it will be possible to channel a considerable amount of fuel for general consumption and export.

In line with the rapid development of the oil and gas industry, it is planned to put over 6,000 km. of new gas, oil and other pipe-lines into operation in 1960. At the same time, the capacities of the present gas pipe-lines will be increased greatly by putting gas turbine stations into service. Capital investments in the oil and gas industry will go up by more than 15% as compared to 1959.

Of the country-wide growth in production, Mr. Kosygin said that the Russian Soviet Federative Socialist Republic will account for almost 90% in oil and 68% in gas. Output of oil will rise by 13% and that of gas by 43%. The increase in gas output in the Russian Federation alone will exceed the amount of gas produced in 1956 throughout the entire U.S.S.R. The first section of the Ryazan oil refinery will go into operation.

Gas statistics from 'down under'

ACCORDING to information supplied by the National Gas Association of Australia, gas issued in New Zealand last year amounted to 24,876,000 therms, an increase of 3.5% over the previous year. Gas sales increased by 2.4%, from 19,375,000 to 19,834,000 therms. Revenue from gas was £2,859,000 and from by-products £1,049,000.

In Australia itself, gas issued by all utilities rose to 244,165,000 therms, an increase over the preceding year of 2%. Gas made from black coal declined to 115,214,000 therms, while gas from c.w.g. plants increased to 38,653,000 therms. Brown coal gasification by the Gas and Fuel Corporation of Victoria increased to 19,727,000 therms.

Gas sales increased by 2.5% over 1957 to 208,769,000 therms and the value of appliance sales was £6,751,000.

Whitby to become first natural gas town in Britain

NATURAL gas will be available in Whitby by next July, making Whitby the first town in Britain to have and use natural gas.

A site is being prepared at the present gasworks for a container for the natural gas which will be brought to the town by pipe-line from boreholes on Eskdaleside, between Aislaby and Egton, and from Fairhead Farm, Grosmont. The plant at the gasworks to reform the natural gas will be built by P.G. Engineering Ltd., of Stockton-on-Tees. The amount available is sufficient to supply Whitby for a number of years.

Heatinaire unit for Irish tests

BANGOR (CO. DOWN) BOROUGH COUNCIL has approved the purchase by the manager of the local gas undertaking, Mr. J. A. Derbyshire, of a Heatinaire unit for experimental installation in one of the Council's new houses, as it was the cheapest equipment on the market, and carried a 15-year guarantee.

Mr. Derbyshire reported on his visit to housing centres in Nottingham and Derby to inspect installations of central heating by gas. The visit, he said, had been well worth while and much valuable information on central heating by gas had been gained.

The results obtained by the East Midlands Gas Board were very encouraging, particularly with the use of the Heatinaire system.

Heating experiment on Grimsby housing estate

AT the request of Grimsby Town Council, the East Midlands Gas Board are to install the latest hot-air heating system in some council dwellings to be built on the Springfield Estate, Grimsby, early next year, on an experimental basis.

The Council has been considering various types of central heating systems for its flats and houses and will compare the gas system with alternative electric underfloor heating, which is also the subject of experiments.

The Southern Gas Board announces that its old gasworks at Anton Lane, *Andover*, have been sold by public auction for £9,500. Gas manufacture ceased at Andover in July, 1958, when the town was linked with the Board's grid system.

BRADFORD COKE BAGGING CRITICISM ANSWERED

BIRKSHALL gasworks, Bradford, the coke bagging system of which was recently the subject of criticism by some Bradford coke merchants, has now found a champion in the person of Mr. John T. Garnett, Governing Director of John Garnett and Son, Ltd., coal merchants of Idle, Bradford. He has written the Bradford *Telegraph and Argus* to say that the Board cannot be expected to make all arrangements for the bagging of coke, as this may be less than 50% of the total output and other types of customer have also to be considered.

Pointing out that during this summer sales of coke were the lowest for some time, he says that the bagging plant would not have been working much more than a third of the time. He contends that any retailer expecting to conduct his business efficiently should be prepared to accept his full responsibility. The Board, as producers are, and always have been, to Mr. Garnett's knowledge, most helpful to the retailers of gas coke and are constantly meeting the trade to discuss difficulties which naturally often occur.

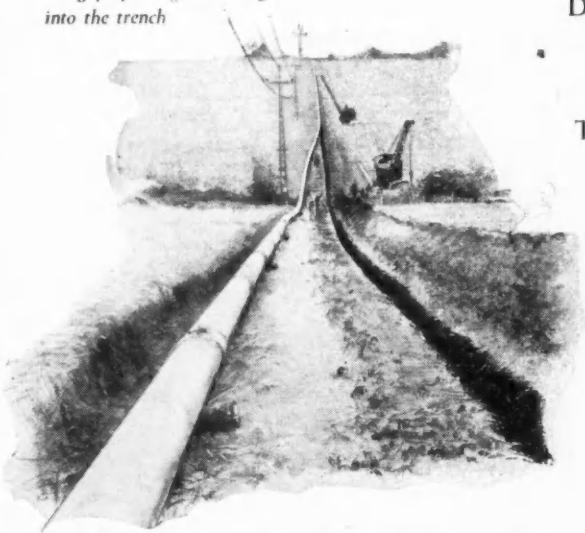
According to Mr. K. E. Laycock, Works Manager at Birkshall gasworks, the bagging department there is now working satisfactorily.

THE STEEL TUBE AGE

Welding the pipes

A NINE-MILE HIGH-PRESSURE GAS MAIN

Welded pipeline, being prepared for snaking into the trench



This pipeline, under construction for the Cambridge Division of the Eastern Gas Board, forms part of an integration scheme for which S & L have supplied more than 130 miles of pipe.

The line is constructed for use at high pressures if required, being tested after completion at 450 lbs. per square inch hydraulic pressure, and followed by a seven-day 100 lbs. per square inch air pressure test. The S & L steel pipes are 12″ diameter, with ends bevelled for welding, and are protected externally with bitumen asbestos sheathing.

Pipe-laying contractors: Biggs, Wall & Co. Ltd.

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Personal

MR. E. J. EDWARDS, at present Station Engineer, Nine Elms, has been appointed Assistant Chief Engineer (Operation and Administration), North Thames Gas Board.

Other appointments announced recently are:

MR. L. J. CLARK, B.E.M., at present Development Engineer, to be Assistant Chief Engineer (Development and Planning).

MR. T. BISPHAM, at present Deputy Station Engineer, Nine Elms, to be Station Engineer, Nine Elms (with the status of Group Engineer).

MR. R. K. LAW, at present Assistant Engineer, Kensal Green, to be Deputy Station Engineer, Nine Elms. Mr. Edwards closes a ten-year term at Nine Elms, where he was posted on January 1, 1950, as deputy station engineer. He became station engineer in May, 1956, this appointment carrying with it the status of group engineer. Previously, he had spent six months as engineer at Lea Bridge, after about four years at Bromley, where he held the post of senior assistant engineer. Earlier still in his 25 years' service he served on the engineering staff at Southall and Bow Common. Mr. Clark, who has held the post of Development Engineer since March 1954, has carried out valuable work in connection with the importation of liquid methane. This has taken him to the United States several times and he has also visited Russia to study the use of methane there. He was for nearly three years joint deputy station engineer at Beckton.

Mr. Bispham has been at Nine Elms since May, 1956, when his appointment as deputy station engineer there closed a six-year spell at Brentford, where he was assistant engineer. Before that he served at Kensal Green, having transferred to the engineering staff after three years at the Fulham research laboratory.

Mr. Law has so far divided his 14 years with the Board fairly equally between Kensal Green and Fulham, with two spells at each station. His appointment to Kensal Green as assistant engineer came in 1958, when he had been senior assistant engineer at Fulham for three years. The appointments date from January 1.

SIR HENRY and LADY JONES recently celebrated their silver wedding anniversary.

MR. G. M. WELLS, Sales Director, has been appointed Assistant Managing Director of Hopkinsons Ltd., with effect from December 18.

MR. T. M. HORN is retiring from the position of Manager of the Leeds branch of Atlas Copco (Great Britain) Ltd., tomorrow. MR. A. W. TOMBLESON, from the firm's Manchester branch, has been appointed to succeed him. With this change, the existing Leeds area has been divided and a new branch office is being established in Newcastle. The Branch Manager there will be MR. W. HOSSENT.

Southern Board starts new courses for surveyors and district fitters

THE Southern Gas Board is beginning a series of ten-day full-time training courses for surveyors and district fitters, designed to keep them abreast of current developments. The courses are designed to emphasise the importance of correct planning in the initial stages, and a sound training in appliance maintenance.

As a preliminary, 82 installation supervisors will attend a three-day appreciation course, so that they can go back and give their men an idea of the kind of up-to-date training they will be receiving.

Fitters' encouragement

Supervisors at the opening session of the appreciation course heard the Board's Deputy Chairman, Mr. A. F. Hetherington, say: 'We believe that the future of our industry depends quite a lot on space heating. I hope you will go back from this course and fire your men with enthusiasm and stress the importance of good fitting and maintenance. Do give your fitters encouragement; the Board is very keen on these courses and wants to see them work.'

The Commercial Manager, Mr. W. H. Elkerton, told supervisors that if they were to remain in the space heating and water heating market they must do a good job of servicing appliances. 'We are in a very competitive field and if we put in appliances we must see that they work well. If the customer gets good service from a fitter she is all the more ready for the next sale,' he said.

Some 557 fitters and 85 surveyors will go through the ten-day courses and will hear the majority of the lectures given by Mr. G. E. Taylor, Senior Gas Fitting Instructor, and Mr. P. B. Kirwan, Gas Fitting Instructor. Some of the subjects covered, which will vary slightly for fitters and surveyors, will include organisation and structure of the gas industry, communications, report writing, plans and sketches, installation surveys, building construction, gas service surveys, workshop practice, apprentice training, quality control, new developments, sales and selling, and repairs and maintenance of appliances.

The training courses are being held in the Southern Gas Board's new appliance training centre at Bourne Valley, Dorset. This is fitted with a lecture room and demonstration workshop, complete with all the latest cookers, water heaters, commercial equipment and fires, and whole house heating equipment.

The courses are under the direction of Mr. D. L. Hill, Training and Education Officer.

Uruguay gas-man in wage claim strike riots

A FORMER engineer and deputy manager of the old Peterborough Gas Company, MR. HAROLD J. PATCHING, now Manager of the British-owned Montevideo Gas and Dry Dock Company in Uruguay, is working to keep up gas production with all the workers on strike over a wage claim.

There has been considerable trouble, with police and troops called out, and Mr. Patching is at present continuing gas production with the help of six other Britons and a body of local sailors.

Diary of forthcoming events

January 5, 6, 7.—THE INSTITUTION OF MECHANICAL ENGINEERS: Symposium on recent mechanical engineering developments in automatic control.

January 7.—EAST MIDLANDS G.C.C.: Smithy Row, Nottingham. Council meeting at 11 a.m.

January 8.—LONDON AND SOUTHERN JUNIORS: 'A Re-organisation of Customer Service,' by D. Foulis.

January 8. — SCOTTISH WESTERN JUNIORS: 9, George Square, Glasgow. 'Heat Service in New Buildings,' by R. D. Bruce.

January 9. — EAST OF SCOTLAND JUNIORS: Dunfermline. Short paper day.

January 12.—MIDLAND JUNIORS: Paper by Mr. J. D. Cormack, Birmingham, on 'The Design and Operation of an Axial Flow Gas Compressor Station.'

January 14.—INSTITUTION OF PLANT ENGINEERS, GLASGOW BRANCH: Scottish Building Centre, 425/427, Sauchiehall Street, Glasgow. 'Selection of Heating Systems for Factories and Offices,' by T. Turner. Joint meeting with the Institution of Heating and Ventilating Engineers. 7.15 p.m.

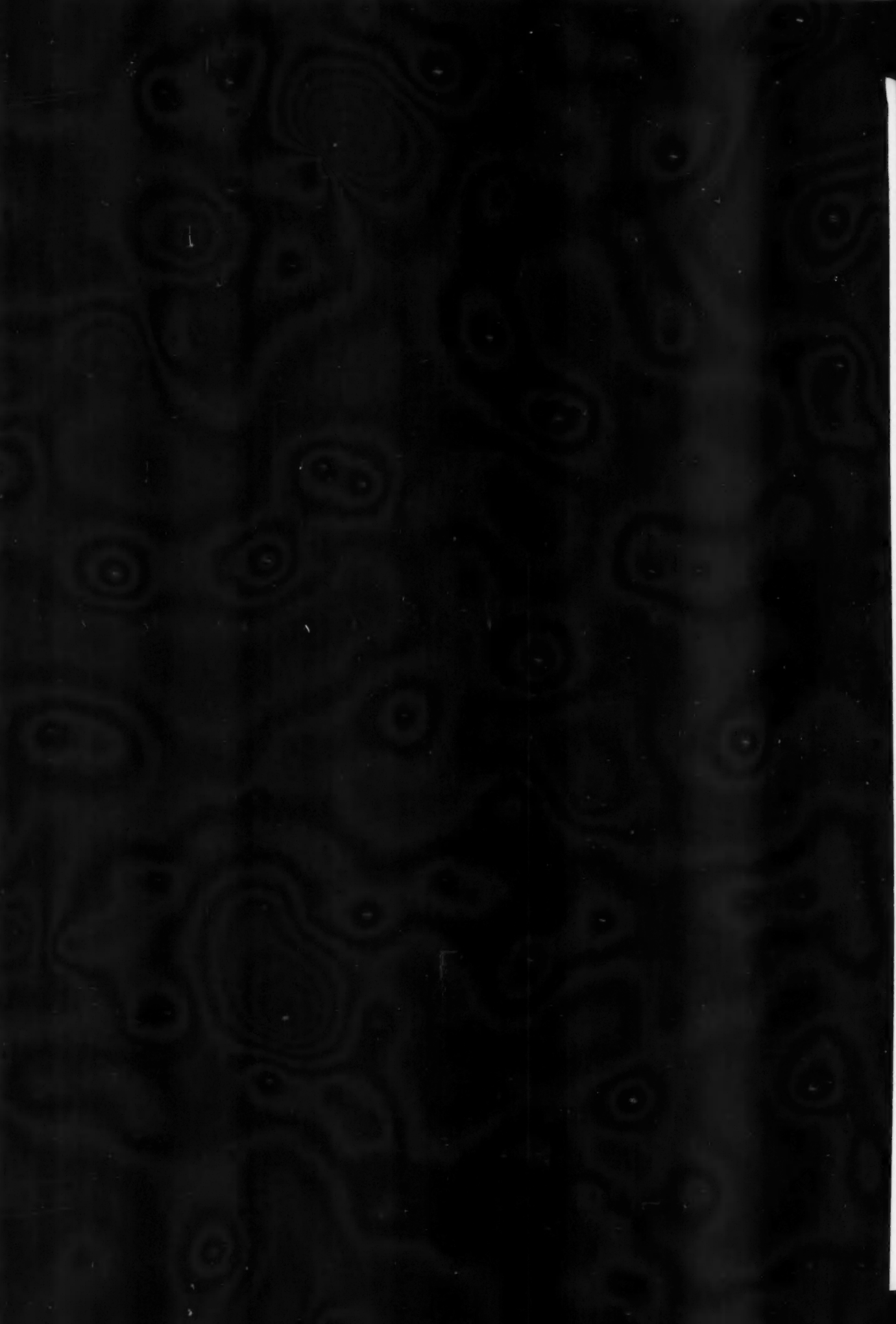
January 15.—COKE OVEN MANAGERS' ASSOCIATION, SOUTHERN SECTION: Park Hotel, Park Place, Cardiff. 'Basic Work on Coal Carbonisation,' by Dr. I. G. C. Dryden.

January 15.—WALES G.C.C.: Bute Terrace, Cardiff. Council meeting.

January 16. — YORKSHIRE JUNIORS: Wakefield. Short paper day.

January 19.—LONDON AND SOUTHERN JUNIORS: Visit to Elliott Brothers (London) Ltd., at Lewisham.

January 20. — MANCHESTER DISTRICT JUNIORS: B.T.R. Industries, Leyland. Paper on White Lund or Distribution.



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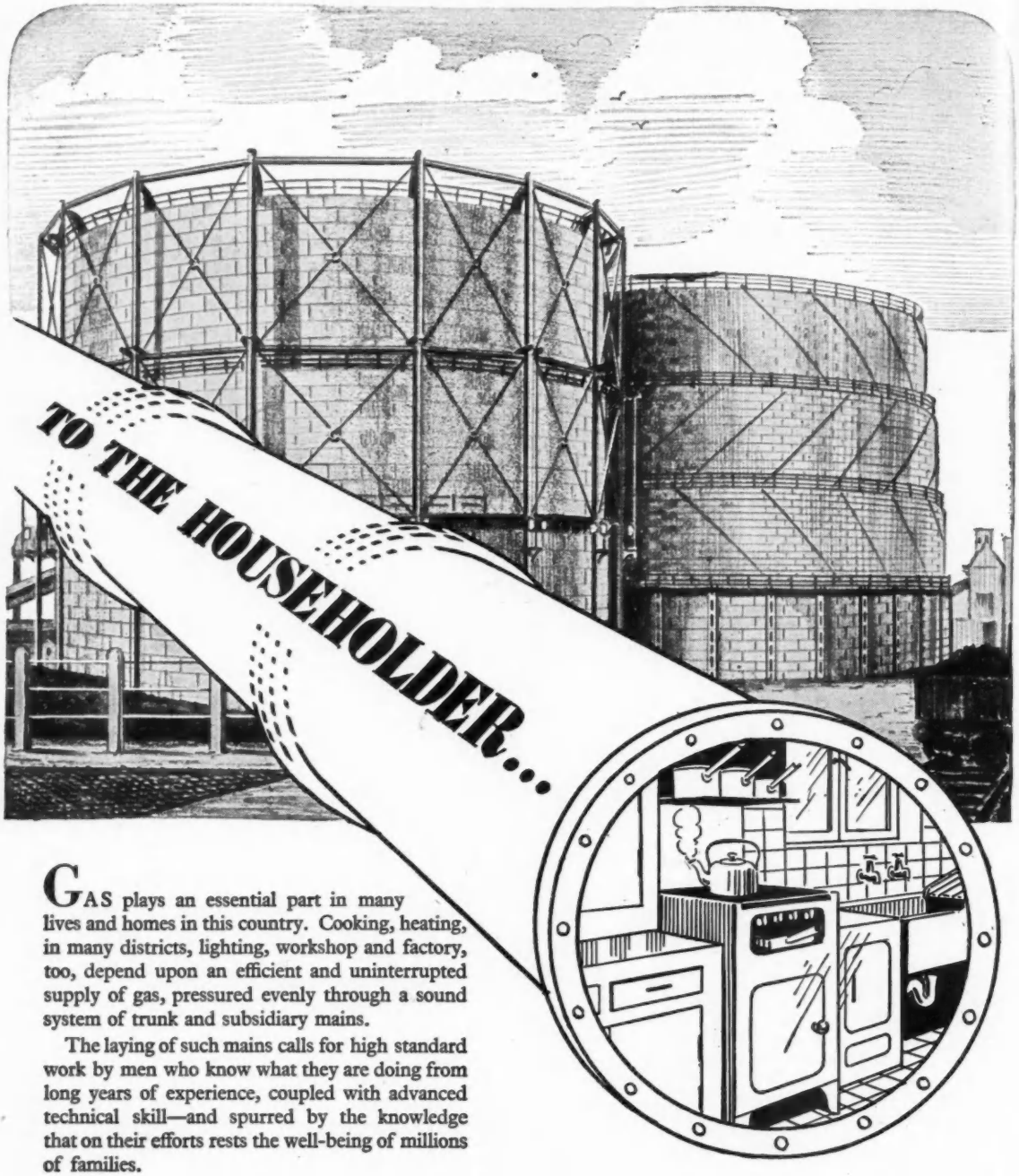

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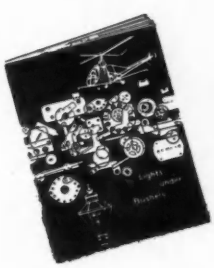

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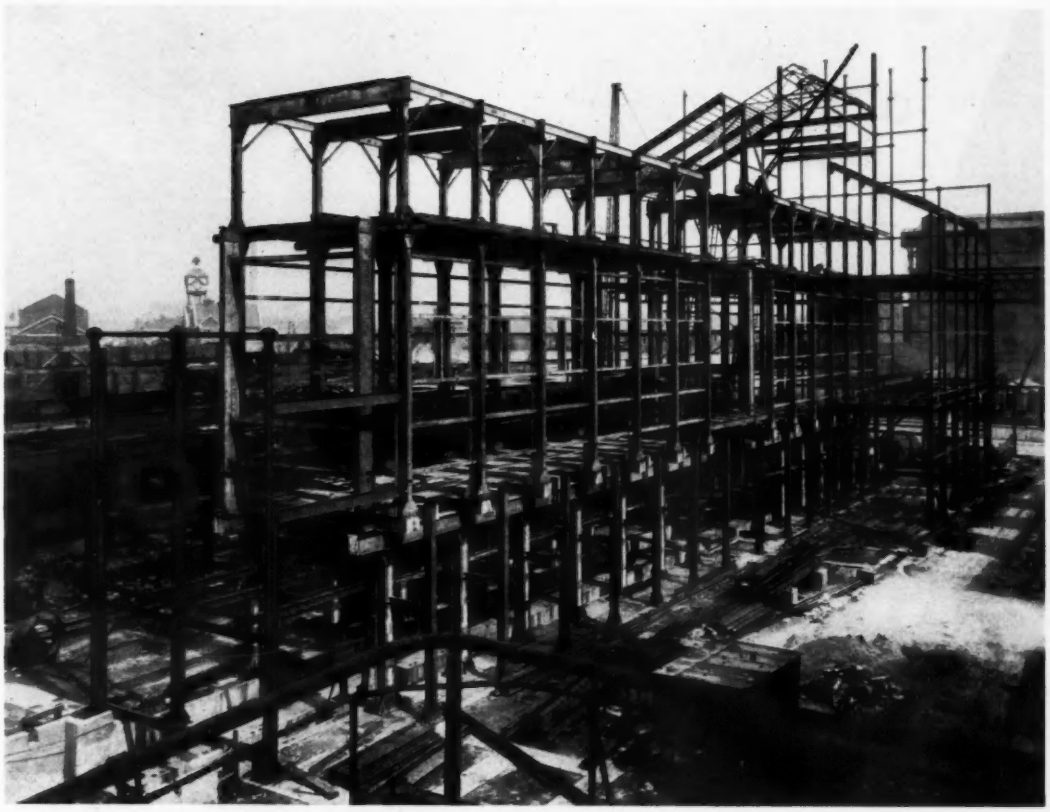

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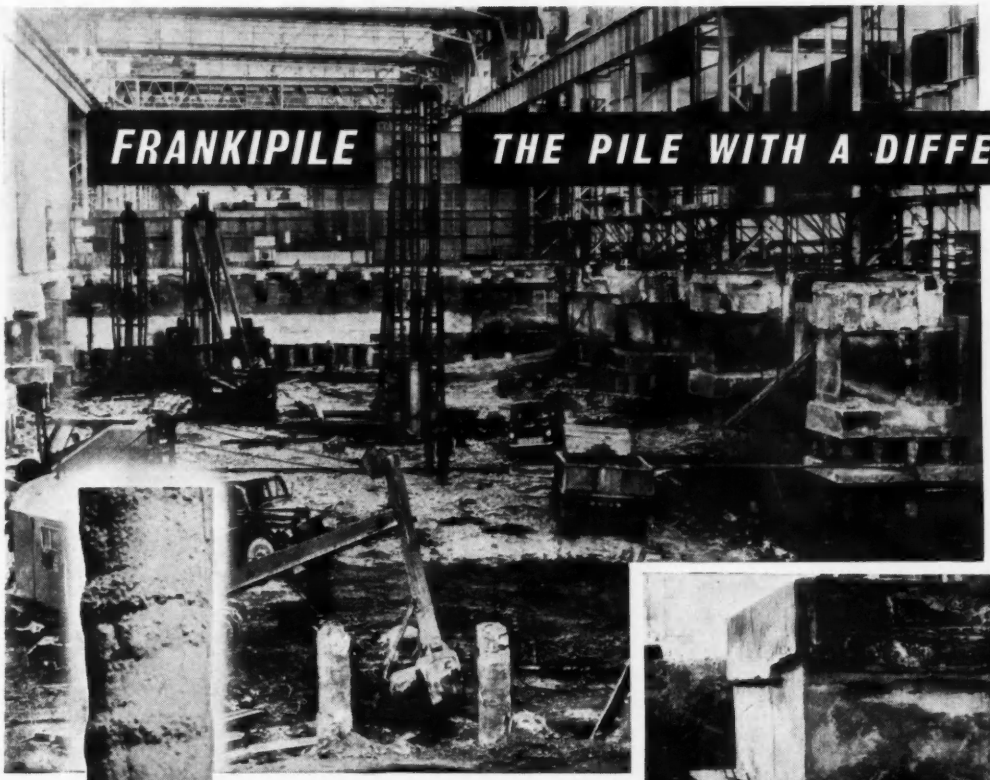

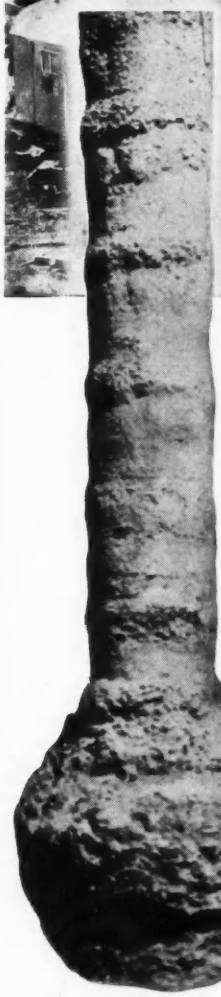

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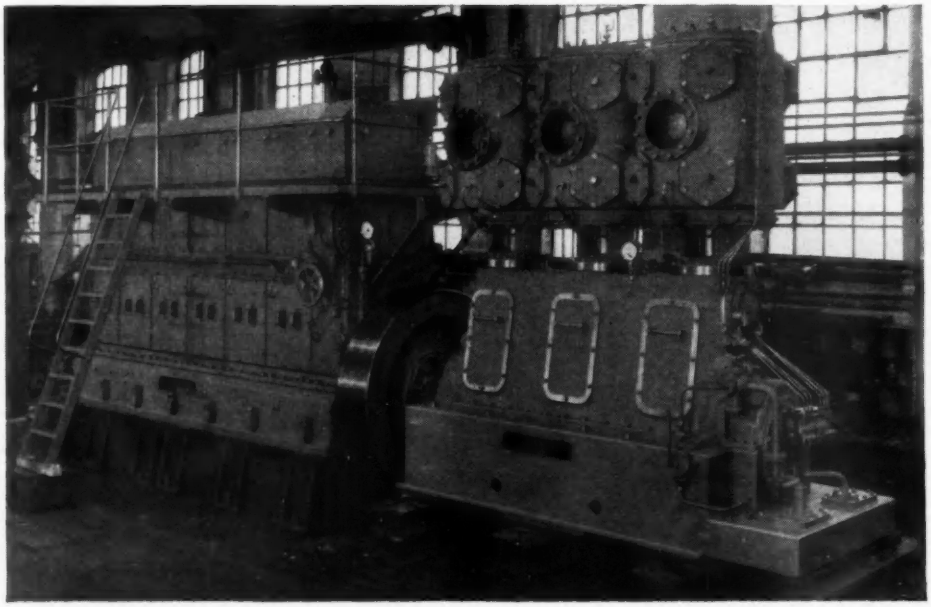

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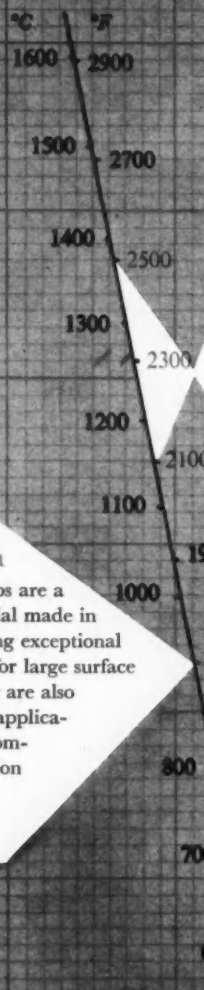

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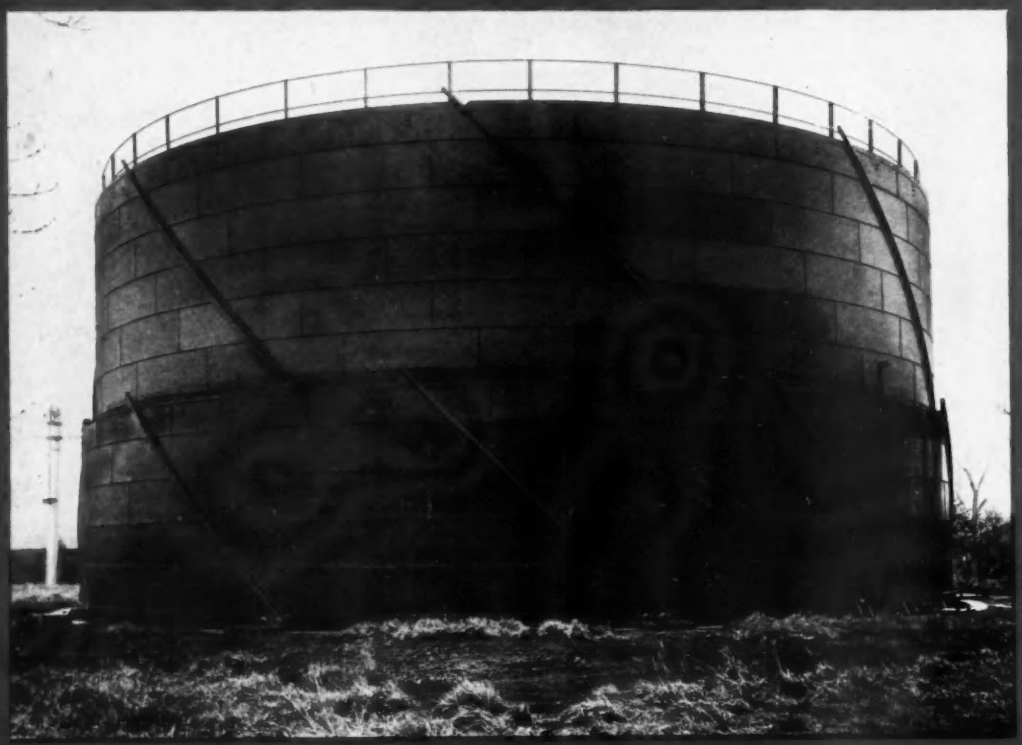

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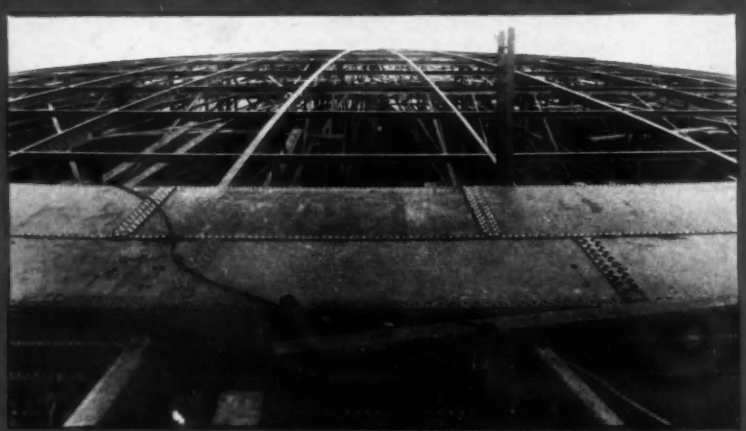

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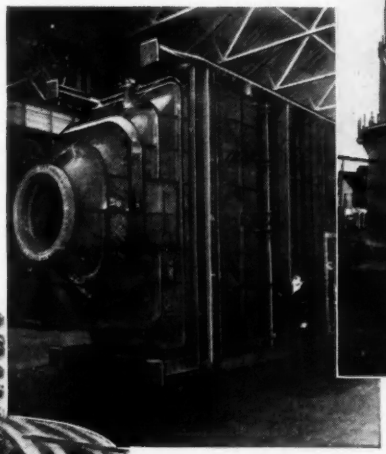

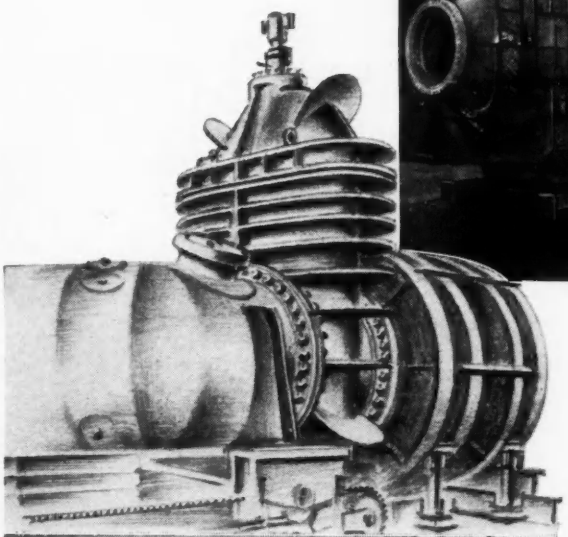

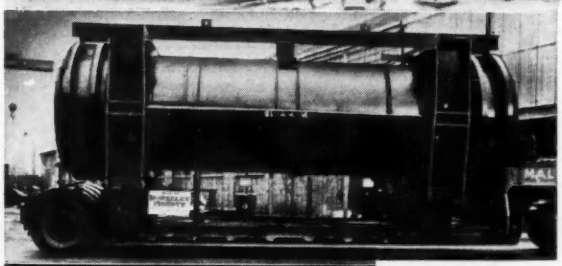

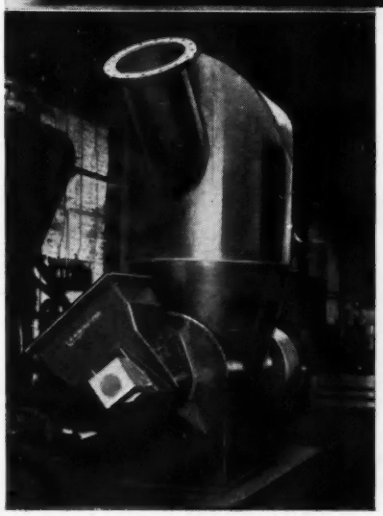

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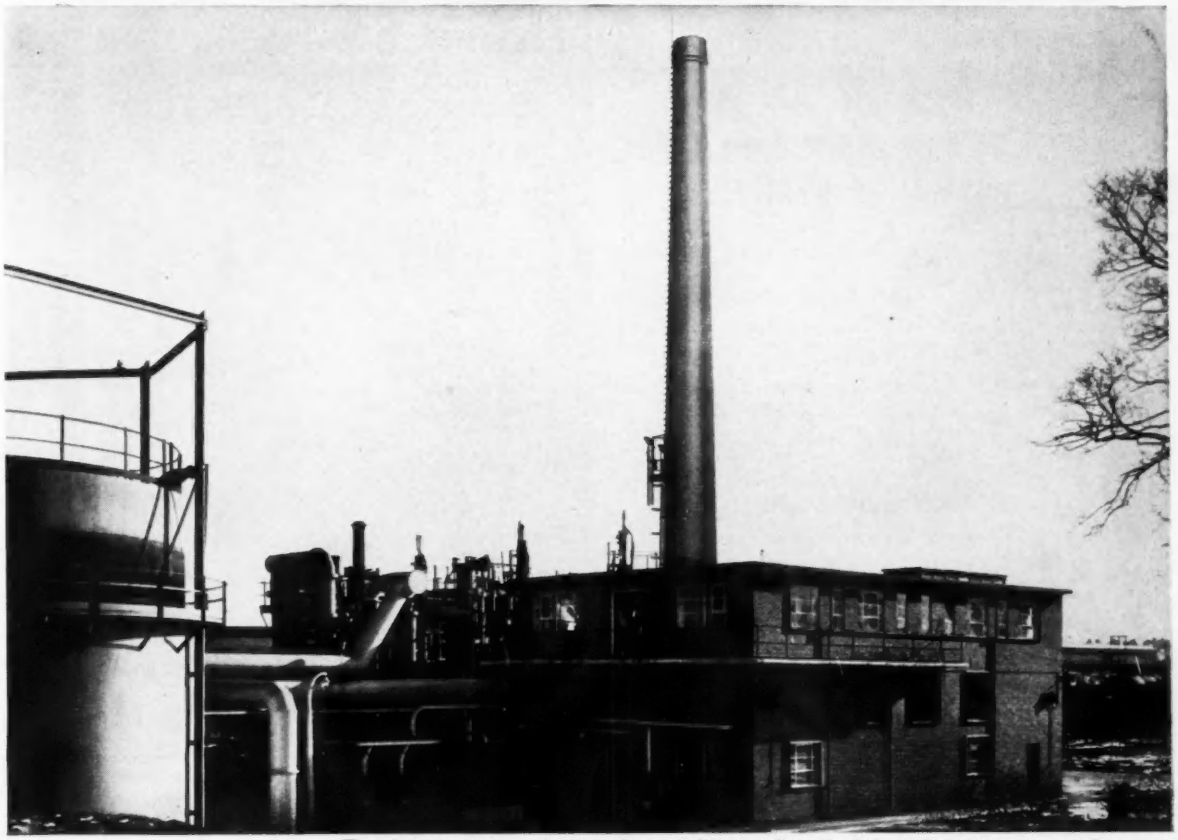
OIL GAS AT COVENTRY



The photograph shows the Humphreys & Glasgow Onia Gegi Catalytic Oil Gas Plant at Coventry.

Onia Gegi Regenerative Plant makes gas from heavy oil

The Onia Gegi Catalytic Oil Gas Plant at Coventry is of Regenerative type and comprises two 3 million cu. ft. per day units. The plant has been laid out so that these may be duplicated later.

Humphreys & Glasgow acted as main contractors for the whole of the work, which involved the development of a new site remote from the remainder of the works, including the gas-cleaning plant, holder, drainage, road works, buildings, etc.

This was the first major installation of Onia Gegi Regenerative Plant to be put to work for the manufacture of gas from heavy oil, and was started up in August 1957. Previous experience with Onia Gegi Plant had been on the self-steaming type and on a pilot scale regenerative unit at Solihull Gas Works, Warwickshire.

The plant is completely self-contained, with compensating gas-holder, exhausters, detarrer, meter, and water-cooling and re-circulating system. The gas is taken direct to purifiers in the old part of the works and thence to the main storage holders. Both units are normally in operation five days a week, supplying gas to the motor industry and other users in Coventry, but are normally shut down at week ends, when the works is relieved of its industrial load.

The tar produced in the plant can be used for process heating, thus making the plant a self-contained unit producing gas without by-products of any kind.

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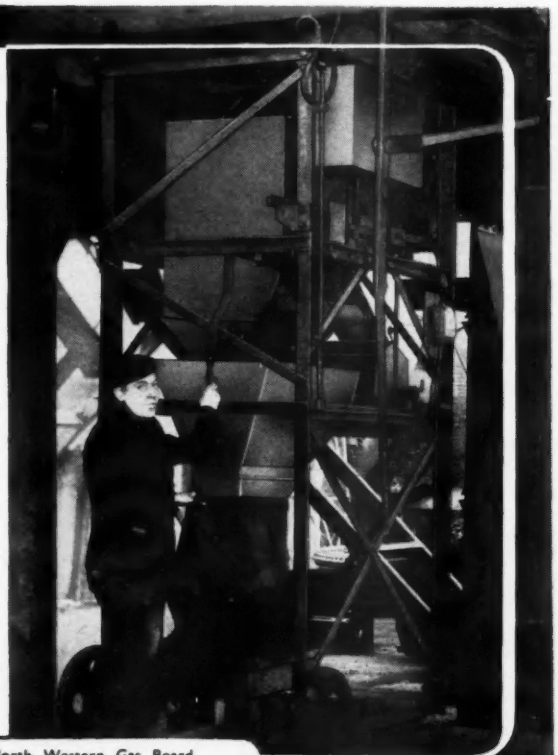
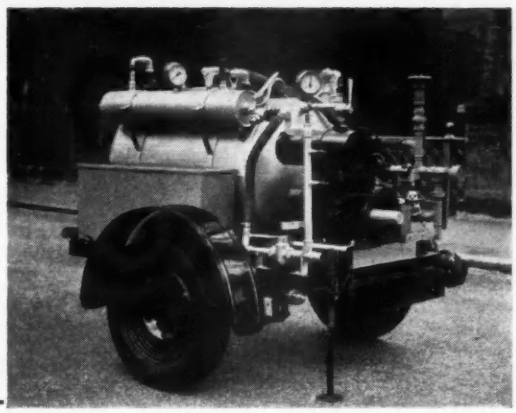


By Courtesy of the North Western Gas Board

ALLAN TAYLOR SERVICE PIPE CLEANING OUTFIT

The 75-gallon vacuum and pressure trailer model Service Pipe Cleaning Outfit (*right*) is now fitted with the "PRESS-VAC" Assembly and cyclone and test-bar assembly. The "PRESS-VAC" assembly enables the operator to apply vacuum or pressure alternatively to the service pipe. This operation "rocks" the obstruction and assists in clearing the stoppage. The "PRESS-VAC" tank is pressurised by the exhauster from the main tank. This permits gas to be used for this pressure operation, thus avoiding the hazard of air entering the main. The cyclone and test-bar assembly enables the operator to make pressure tests before and after cleaning the service pipe, the test taps passing 50 cu. ft. or 100 cu. ft. as required. By using the cyclone the dust drawn from the service pipe is deposited in the sight glass for inspection and then into the easily removable container below. This enables the operator to determine the extent of the cleaning and prevents the greater part of the dust from entering the main tank. The "PRESS-VAC" assembly can be fitted to all existing service cleaning outfits.



SYPHON EMPTYING OUTFIT

The Vacuum Syphon Emptying Outfit (*left*) is mounted on a 4 ton **Thames** Chassis. A 600 gallon galvanised tank is fitted. A rotary type exhauster is driven by a 4 b.h.p. four-stroke air cooled engine, mounted on a sub-frame behind the cab. The tank is fitted with a flame-proof vent and the outfit can be used for high or low pressure syphon emptying. A large manhole at the rear allows the tank to be cleaned easily. A sight glass is fitted to enable the operator to know when the Syphon is emptied. Twenty-five feet of 1½ in. suction hose is supplied with the outfit. The outfit can be used for vacuum or pressure working.

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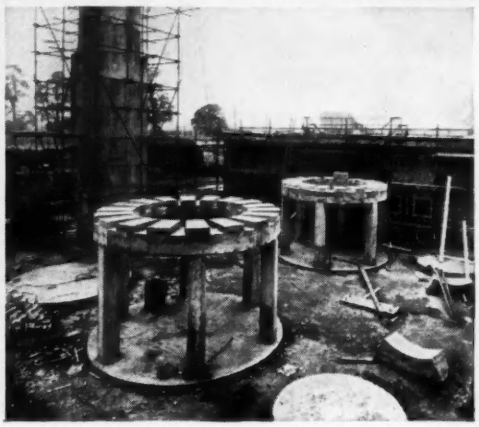
OIL GAS PLANT AT COVENTRY



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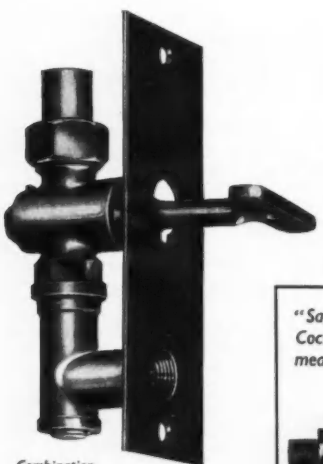

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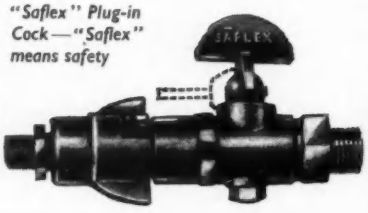

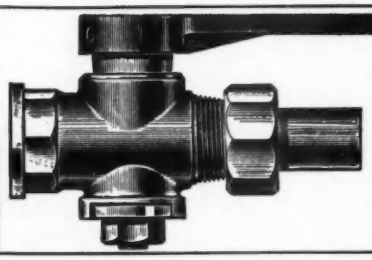

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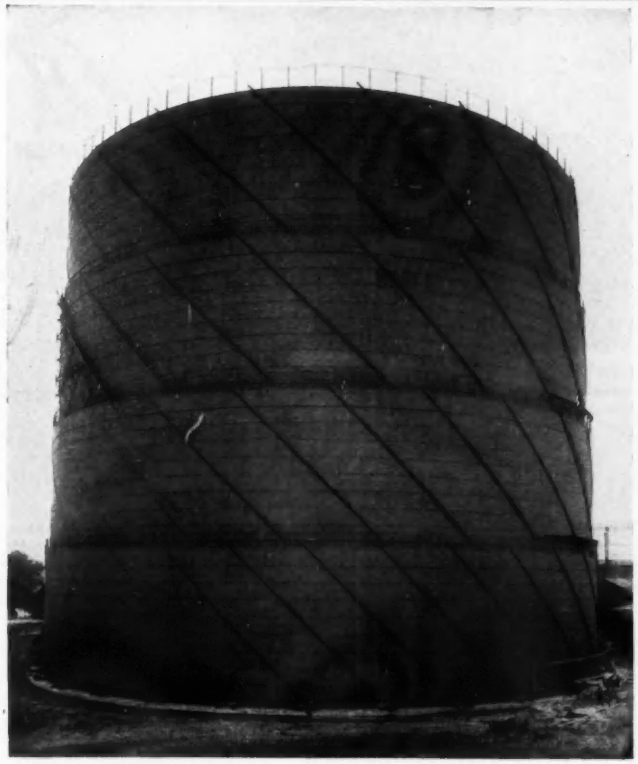

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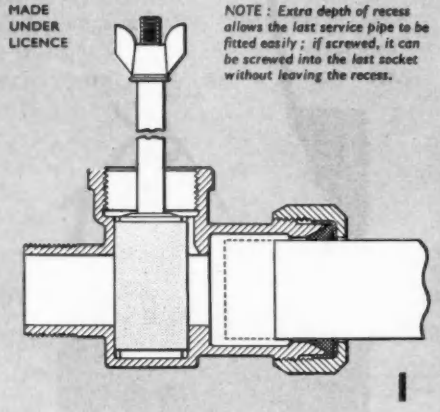

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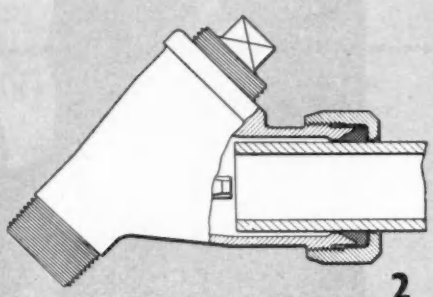

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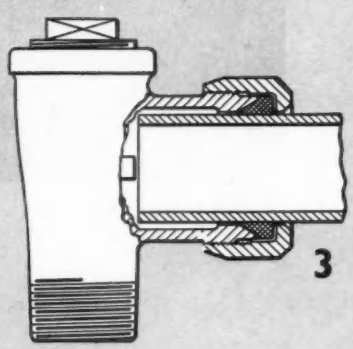

3

In all of these, after removing the top plug, the main can be sealed off by expanding a rubber 'stopper' both for testing purposes and while the service is being connected.

Standard Viking Johnson bolted couplings are extensively used on new mains and for repairing old ones. Viking Johnson flange adapters are useful for connecting plain pipes to valves or orifice plates and have been recommended under safety regulations for isolating gas chambers.

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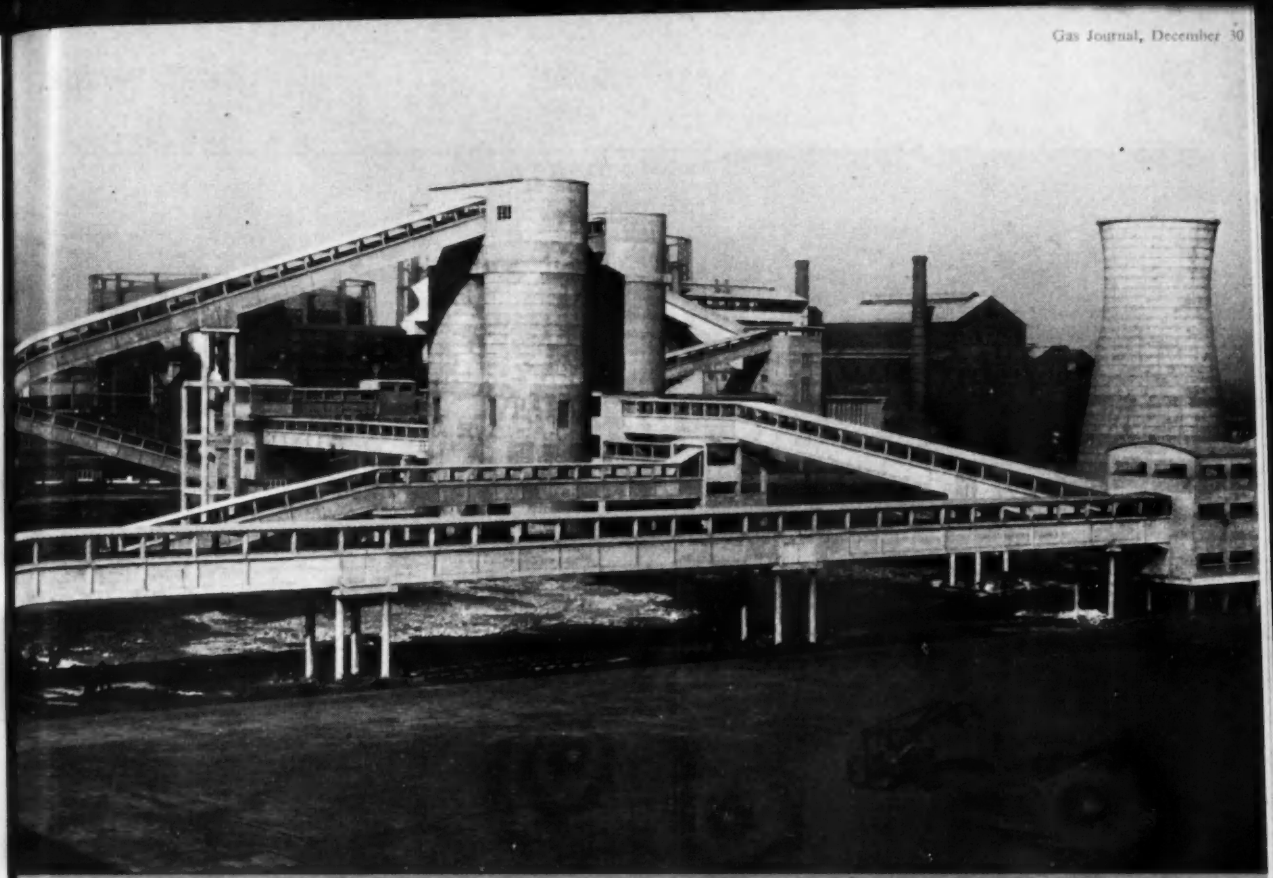

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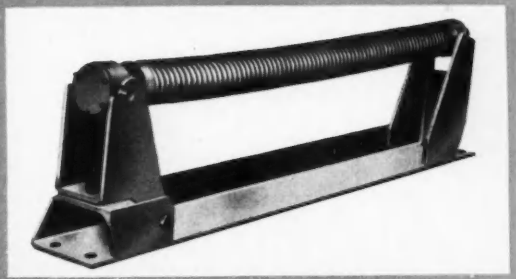
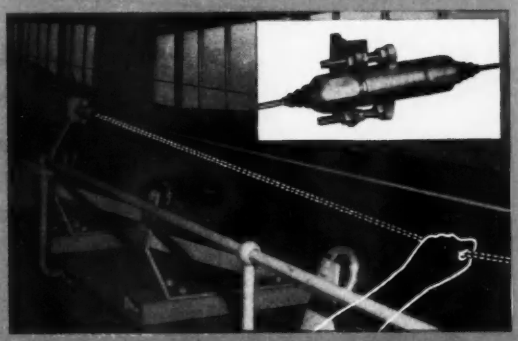


The Featherbed Impact Idler which is based on a resilient coiled spring *and* the Huwood Concentric Cable Signalling System which allows the conveyor to be stopped INSTANTLY from any point in its length.



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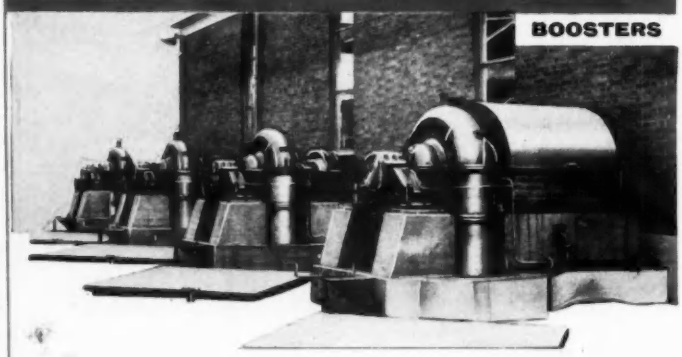
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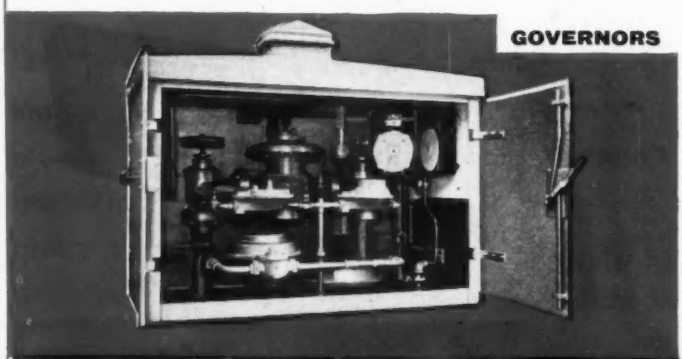
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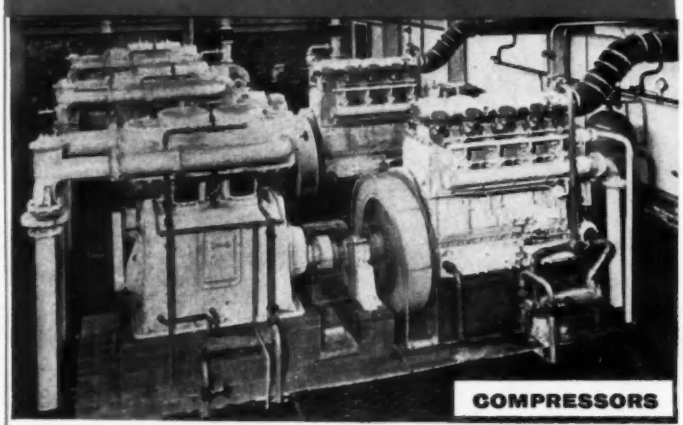
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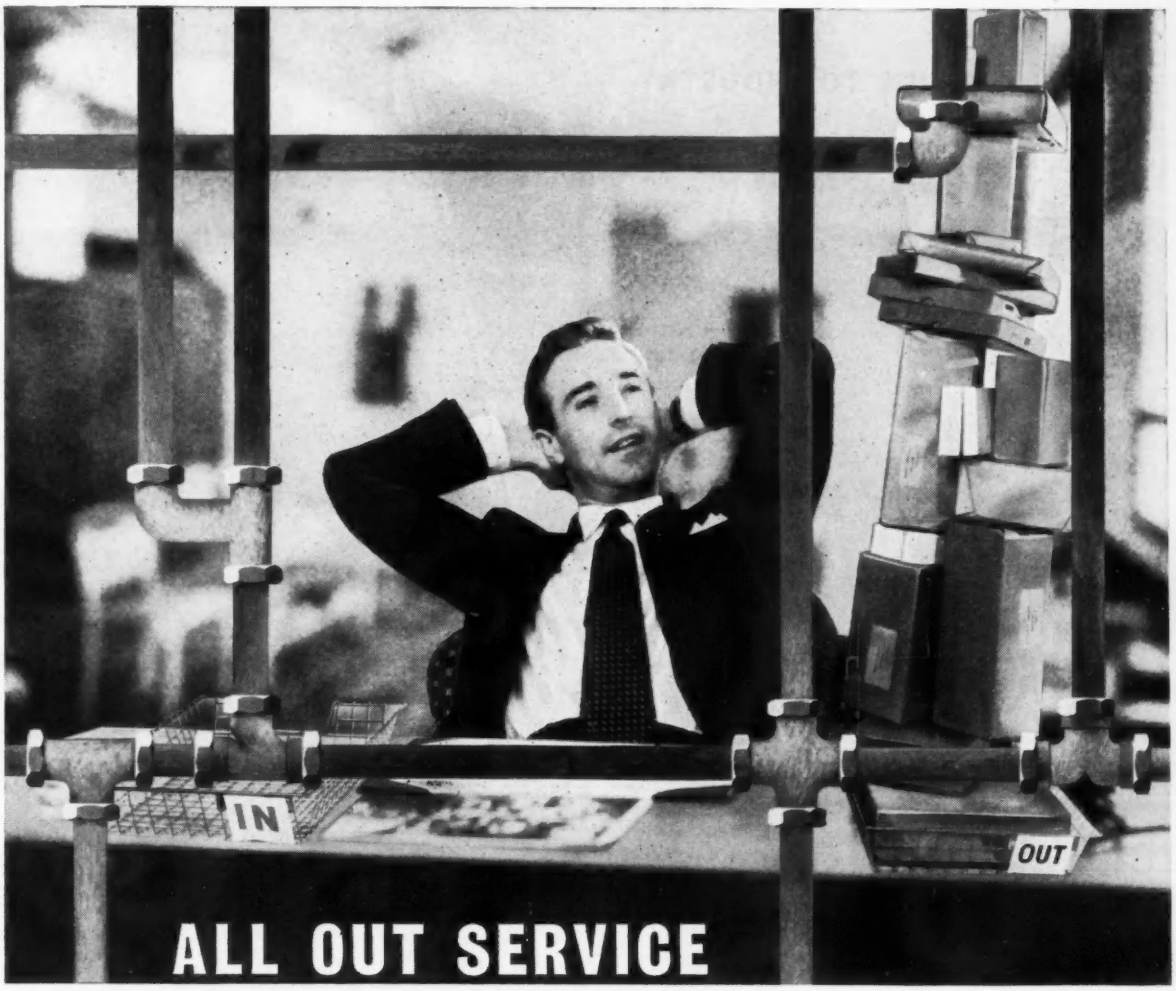

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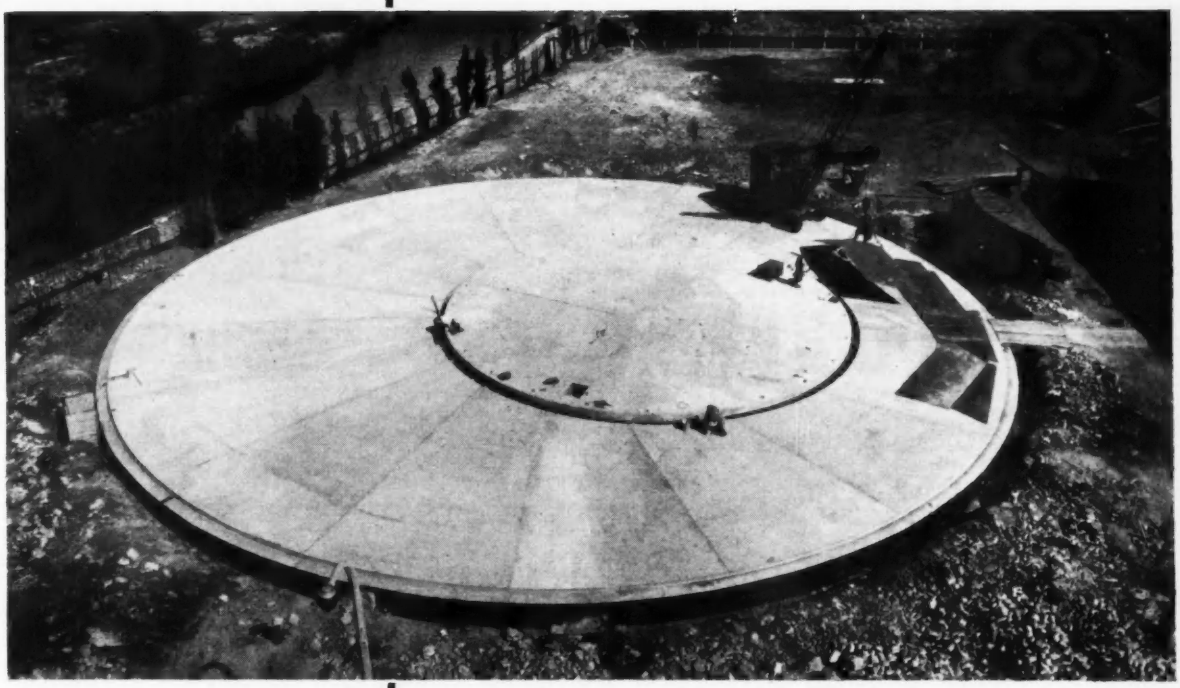

The illustration shows a reinforced concrete foundation for a P F D tank under construction to the design of North Thames Gas Board at their Southall Works.

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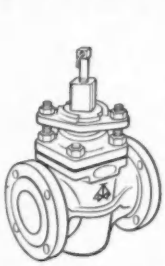

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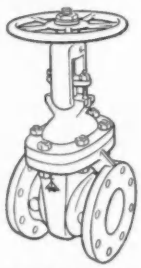
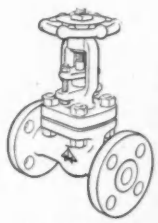


C.I. Wedge Gate 2"—8" A.S.A. Pressure Class 125



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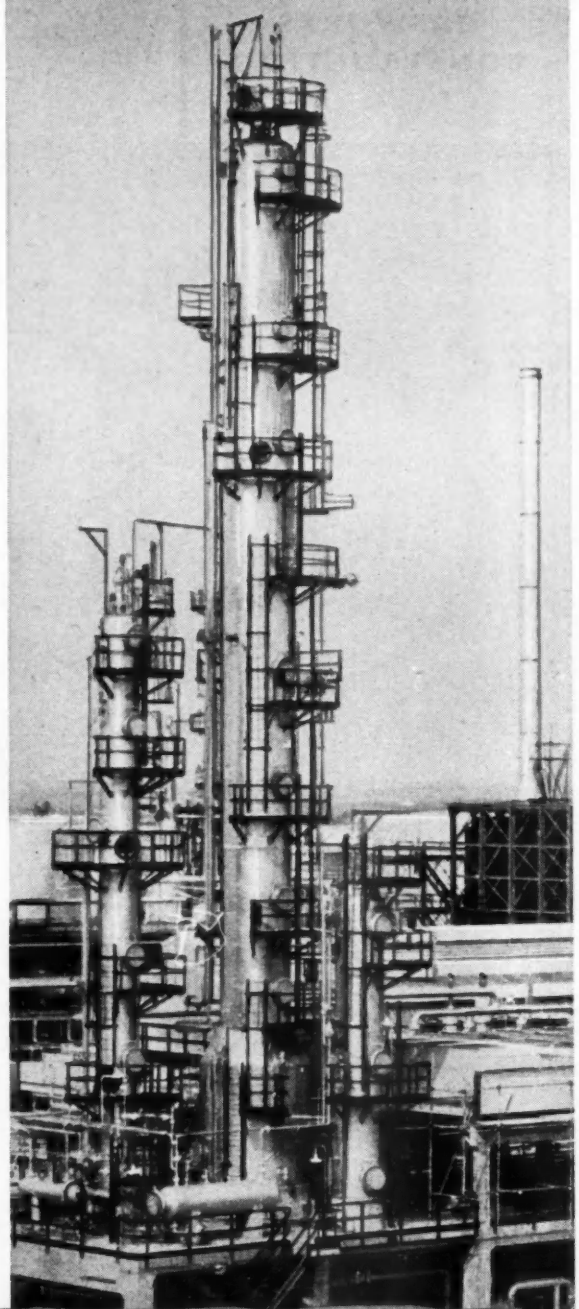

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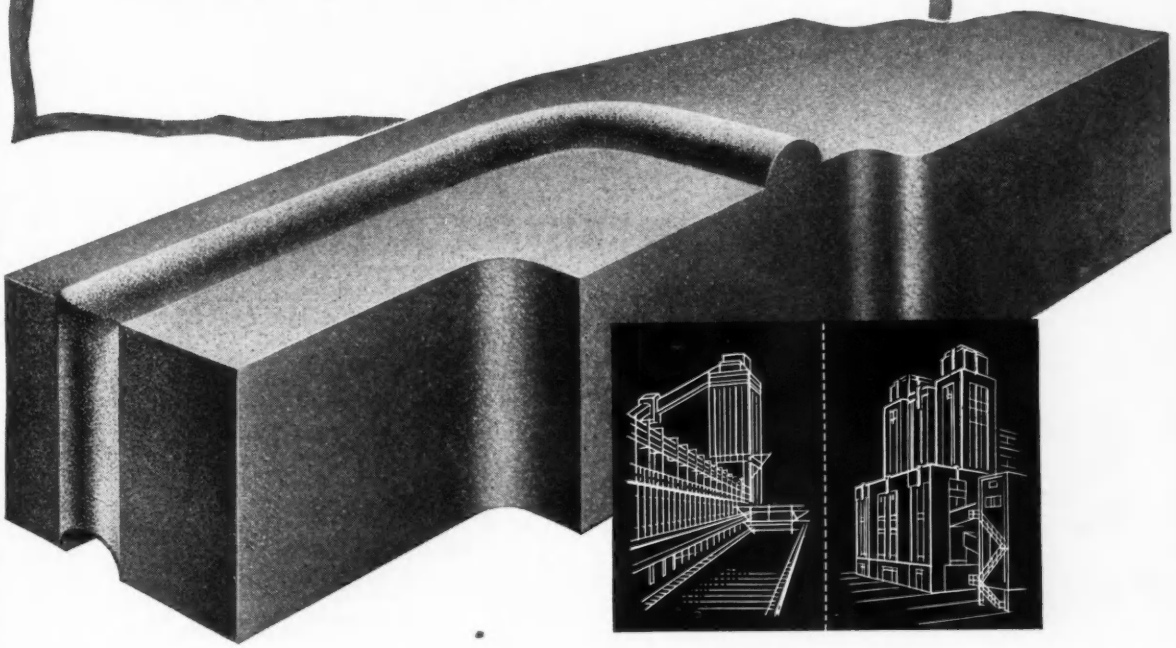

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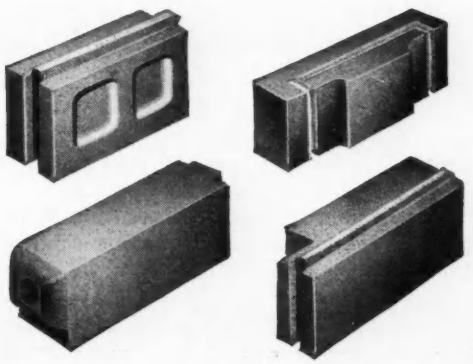

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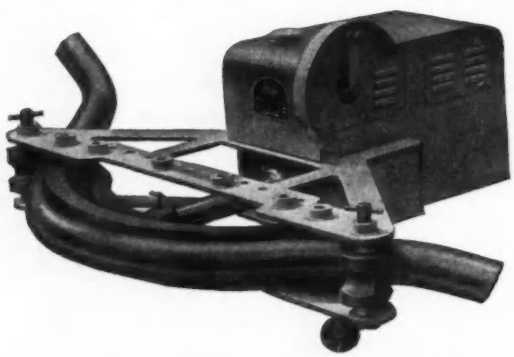

You can take these STAFFA 4" Hand or Motorised Hydraulic Benders right up to your work because there is no fixing, filling or heating; and when your pipe is at the correct angle of bend, it is automatically ejected from the former. There is a whole range of STAFFA Benders for pipes and tubes from ¼" to 12".

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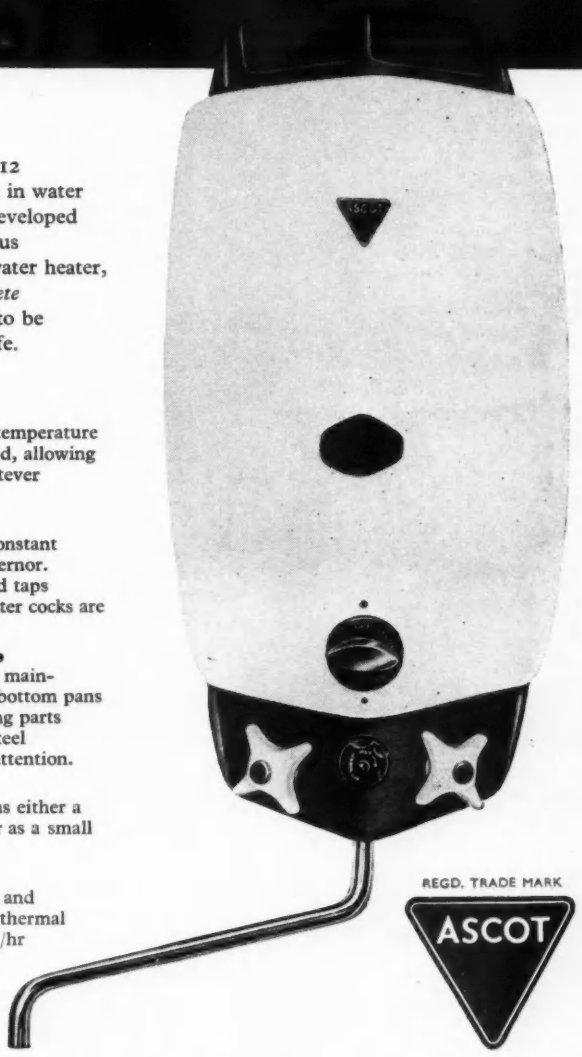
The New Ascot De Luxe type G512 represents the latest developments in water heater design and performance. Developed by Ascot for use as an instantaneous multipoint and single-point sink water heater, this Ascot De Luxe with its *complete* controls for gas and water is sure to be popular with the modern housewife. Here are some of its features :—



Temperature Selector
A temperature selector controlling a temperature rise between 45°-100°F is incorporated, allowing the housewife to choose water at whatever heat she wants.

Gas and Water Controls
The Ascot De Luxe is fitted with a constant volume gas governor and a water governor. External controls include hot and cold taps and a rotary gas control. Gas and water cocks are an integral part of the heater lining.

Ease of Fixing and Maintenance
The De Luxe ensures easy fixing and maintenance. The outer case and top and bottom pans are quickly detachable, and all working parts are readily accessible. The stainless steel Ascot 'flat flame' burner needs little attention.

Versatility
The De Luxe is designed to operate as either a single point heater with a 9″ spout, or as a small multipoint heater.

Performance
The De Luxe is 23¾″ high, 10½″ wide and 8 5/16″ deep and gives 30,000 B.t.u./hr. thermal output from an input of 40,000 B.t.u./hr producing 0.5 g.p.m. raised 100°F, 0.625 g.p.m. raised 80°F, and pro rata. Pilot consumption is 250 B.t.u./hr.

REGD. TRADE MARK
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For full details of the Ascot De Luxe type G512 write to
ASCOT GAS WATER HEATERS LIMITED, 255 NORTH CIRCULAR ROAD, NEASDEN, N.W.10

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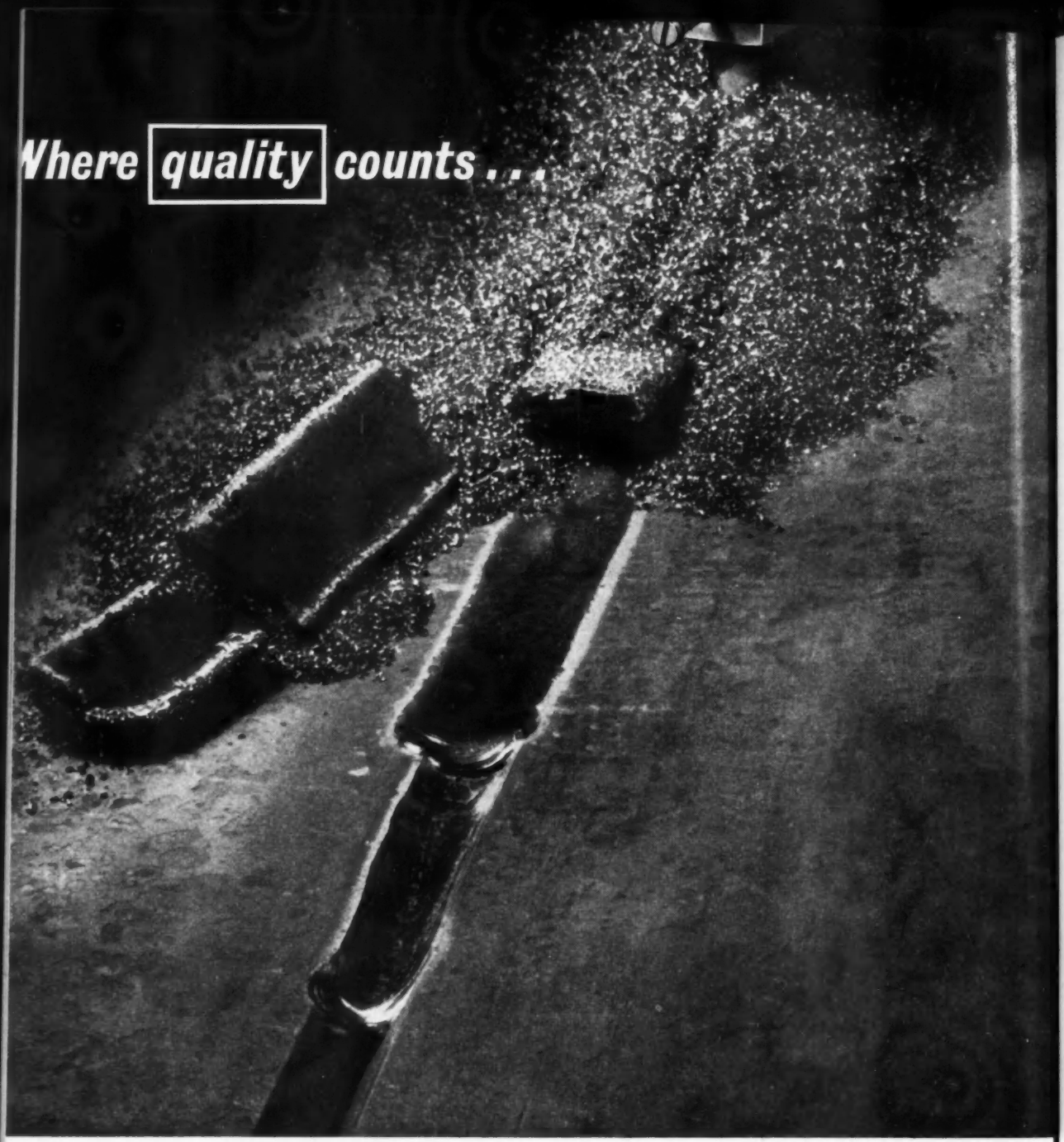

MUREX "MURAFLUX A" for submerged-arc welding

"Muraflux A" is the first of a new range of Murex granular fluxes for submerged-arc welding. It has been specially developed for the welding of mild steel by all machines using A.C. or D.C. for submerged-arc welding.

The flux may be used with ordinary filler wires but is specially recommended for use with "Murawire W1" or "Murawire W2" supplied by Murex. When used with these wires, "Muraflux A" produces welds of high radiographic standard suitable for Class 1 work, and the flux has been granted approval by Lloyd's Register of Shipping and is accepted by the Ministry of Transport.

"Muraflux A" is suitable for either the single pass or multi-pass welding of various joints in mild steel as well as plug welds and the building up of worn mild steel parts. Good penetration can be obtained and unfused flux can be re-covered for further use.

"Muraflux S.1" granular flux for the submerged-arc welding of stainless steel is also available with the appropriate Murex S.W.1 and S.W.2 filler wires.

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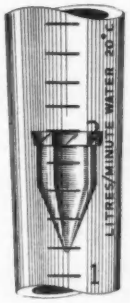
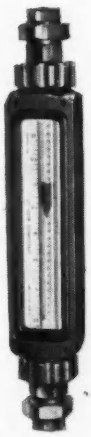
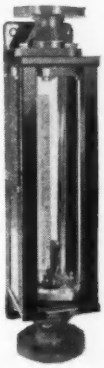


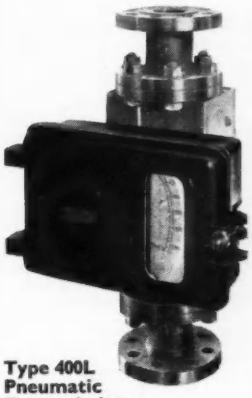
A typical glass tube and float



Type 900 General purpose. With screwed connections



Type 907 Industrial service. With flanged connections



Type 400L Pneumatic Transmitting Rotameter with lagged body

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FLUID MEASUREMENT AND CONTROL

FLOW-DENSITY-LEVEL

FLOW MEASUREMENT

The Rotameter type of variable-area flowmeter is applicable to most of the flow measurement problems which arise in industry and research.

It is particularly useful in the chemical industry because it can be constructed in a variety of corrosion-resisting materials.

When the working conditions are appropriate the direct-reading glass-tube Rotameter is a first choice on account of its inherent simplicity. For work which requires high accuracy it may be calibrated individually for the fluid which has to be handled, or if a lower degree of accuracy can be tolerated an instrument chosen from the interchangeable "Metric" series shows advantages in respect of lower cost and quick delivery. The new mountings, Types 907 and 914, offer in addition, interchangeable gland packing, including P.T.F.E., with robust corrosion-resisting structural parts.

Glass-tube Rotameters are used to measure flows between:

2 ccs/Min and 2,600 L/Min of gases

or between:

0 cc/Min and 225 L/Min of liquids.

Rotameters are also made in which the tapered metering tube is of metal. These may be direct reading, or they may have transmitting mechanisms (electric or pneumatic) giving signals which will operate recorders or controllers. Some designs will work at high pressures and temperatures (e.g., 5,000 p.s.i.g. or 500°C).

A large metal-tube Rotameter will measure liquid flows up to 5,000 L/Min. Several types of alarm are available to signal changes in flow beyond desired limits.

LIQUID DENSITY MEASUREMENT

The "RM" Density Meter provides a continuous indication of the density of a liquid flowing through it, this indication taking the form of either an electric or a pneumatic signal which can be displayed upon an appropriate instrument. It will handle most corrosive liquids and is particularly successful in dealing with muds and slurries (lime, china clay, etc.).

At the maximum sensitivity, full-scale deflection corresponds to a density change of 0·1 gm/ml, and variations of ·001 gm/ml can be detected with certainty.

On account of its small measurement lag, the "RM" Density Meter gives excellent results in automatic density control systems. A new design of Density Meter for use with clean liquids is now available which has a maximum sensitivity of 0·03 gm/ml for full-scale deflection and can accommodate line pressures up to 75 p.s.i.g.

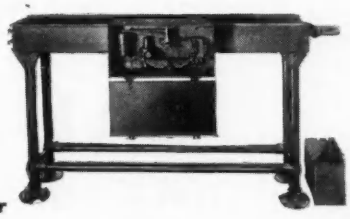
"EKSTROM" LIQUID LEVEL INDICATOR

The "Ekstrom" level gauge consists of a tube of non-magnetic material (e.g., stainless steel) containing a magnetised float which rises and falls with changes in the liquid level. Adjacent to this is a glass tube in which is a hollow iron ball immersed in butanol. The ball forms in effect a weightless pointer and follows the movements of the magnetised float.

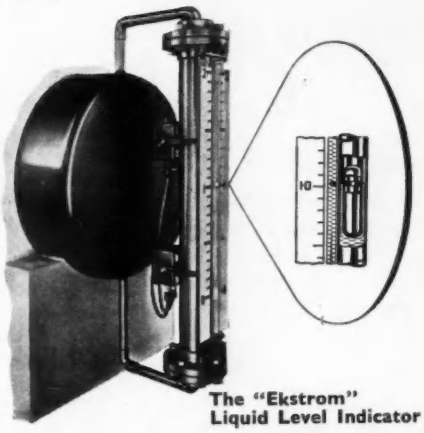
Accidental breakage of the glass indicator tube does not involve any loss of plant fluid, and the "Ekstrom" level gauge is, therefore, suitable for use on tanks containing dangerous or corrosive liquids.

These gauges can be supplied to work for most liquids, and are often made to cover level changes of 18 feet. They can be provided with magnetically-operated electric or pneumatic switches for high or low level alarm purposes or for pump control.

Catalogue GJ2000/1 is available on request.



The "RM" Density Meter



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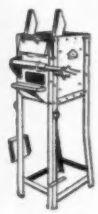

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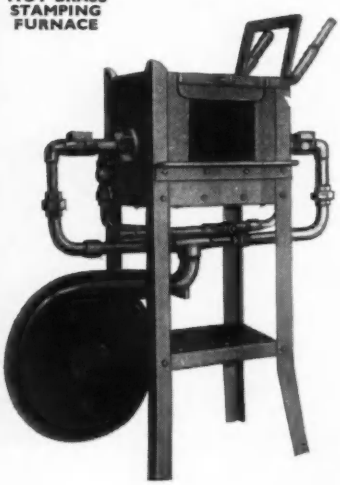

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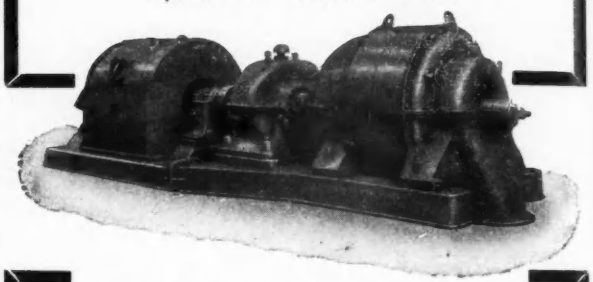

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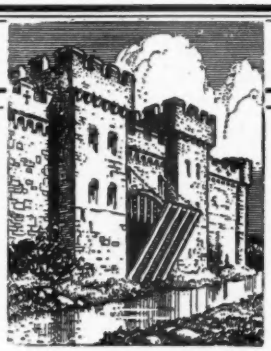

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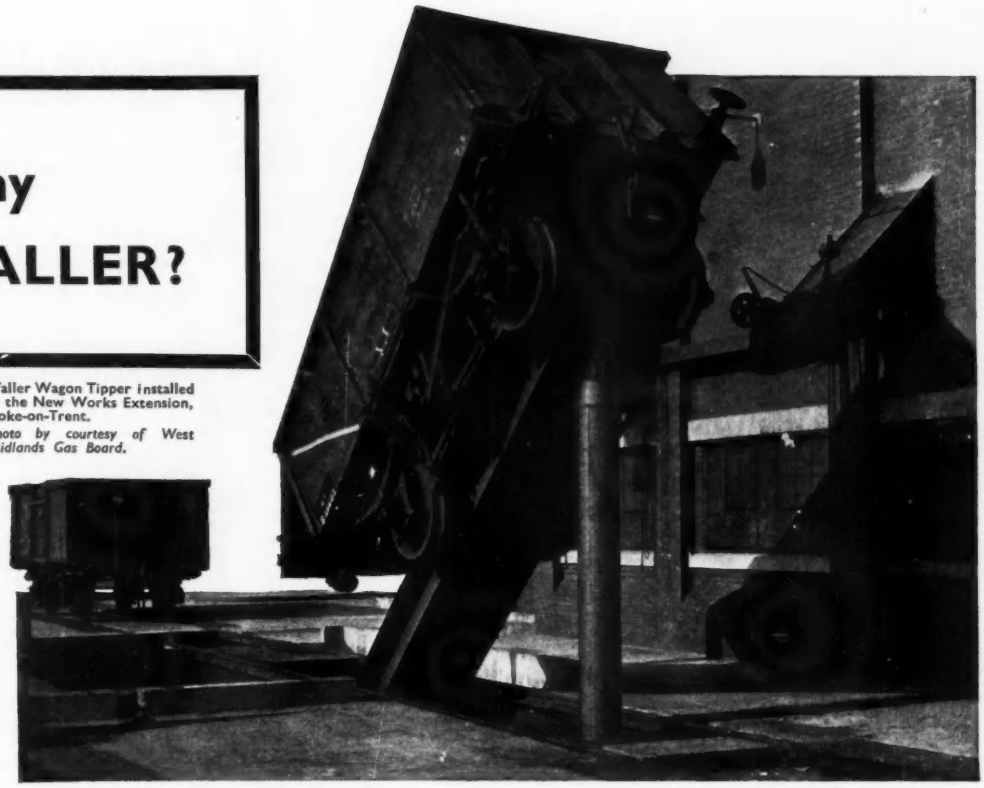

Waller Wagon Tipper installed at the New Works Extension, Stoke-on-Trent.
Photo by courtesy of West Midlands Gas Board.

2 *Wagon Tippers*

"A chain is as strong as its weakest link." Bearing this well-known maxim in mind, Waller ensure that their machines are made to the highest, *all-round* standard attainable. One of the "links" in the wagon tipper is the *steel* ram, used for strength and resilience in withstanding shocks, such as impact of wagons when shunting. Here is *another* answer to "Why Waller?"

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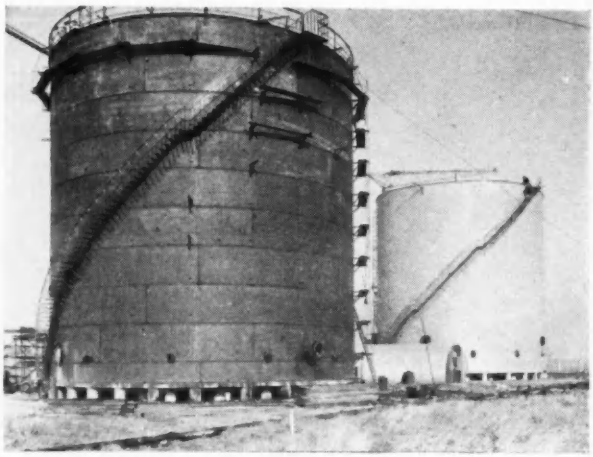

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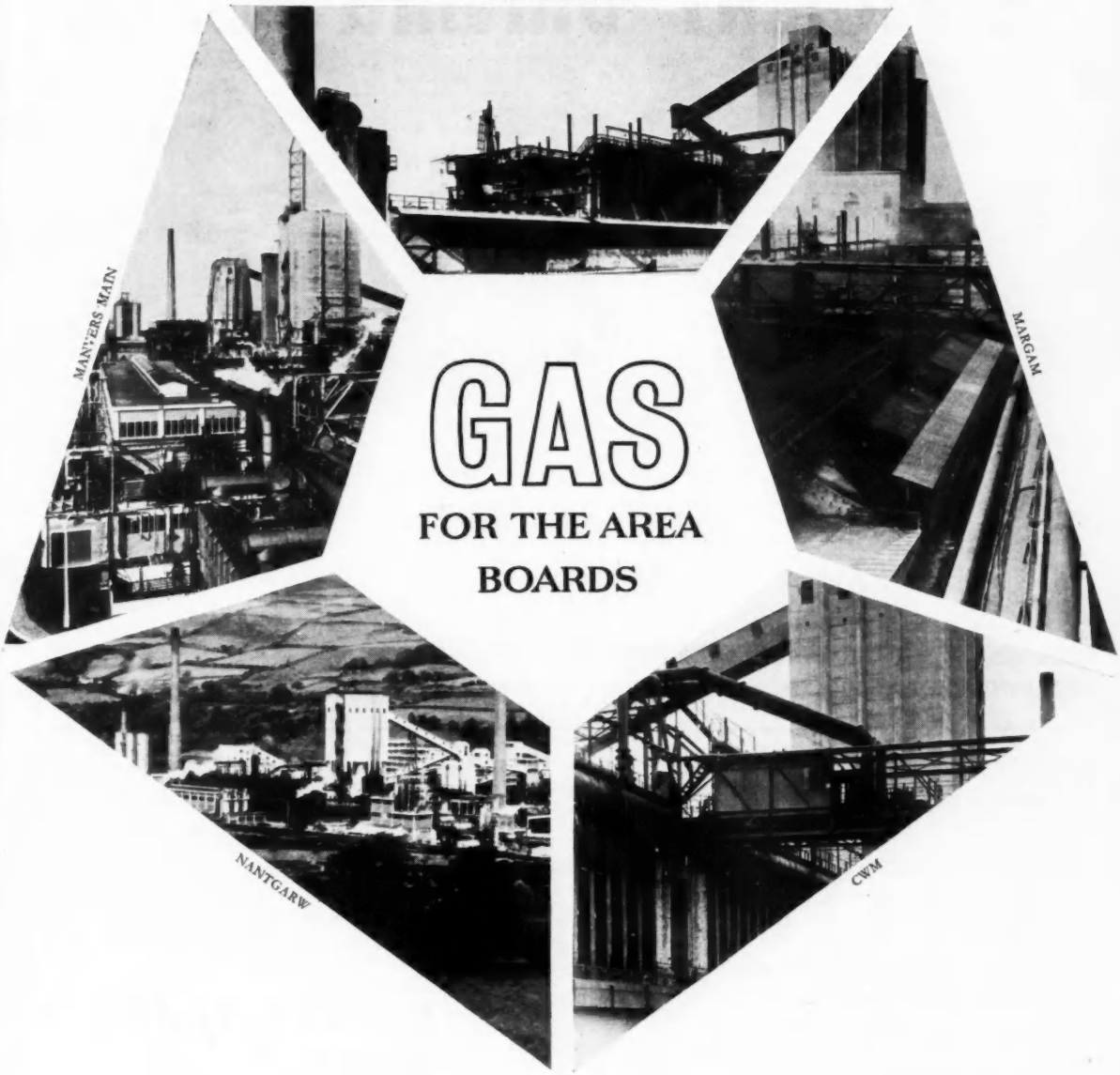

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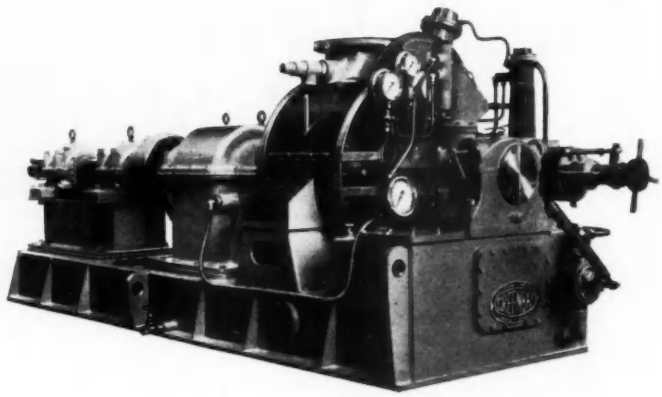

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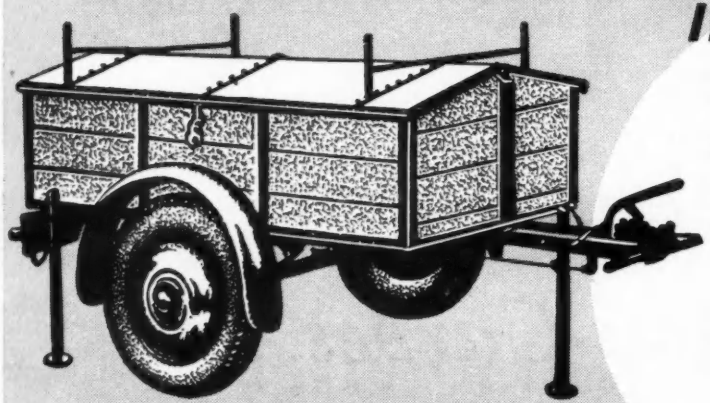

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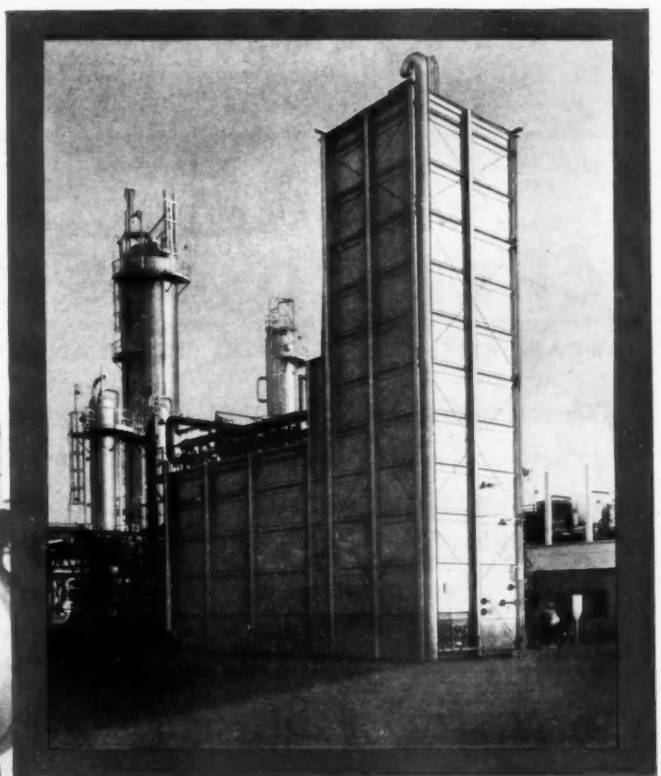

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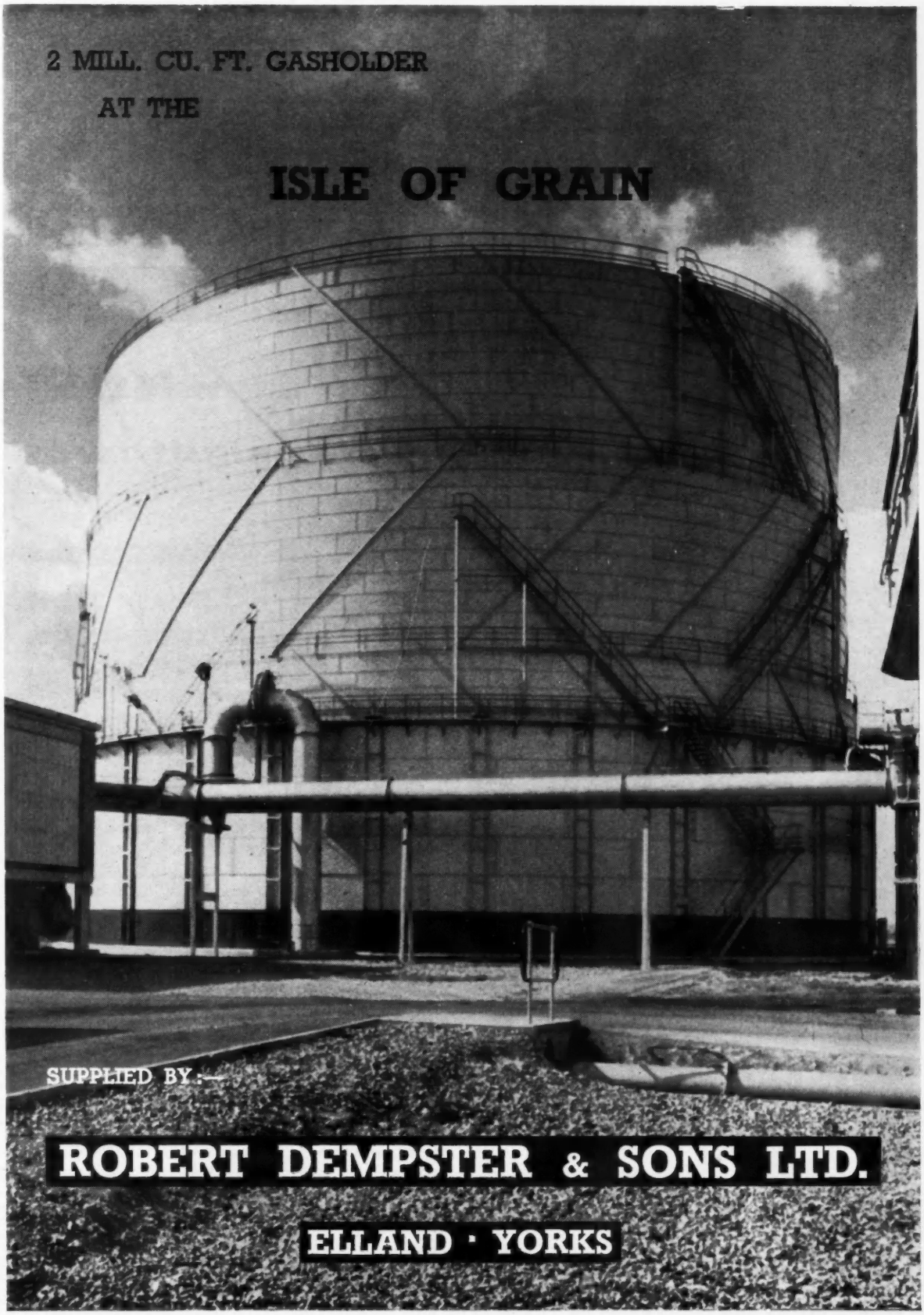
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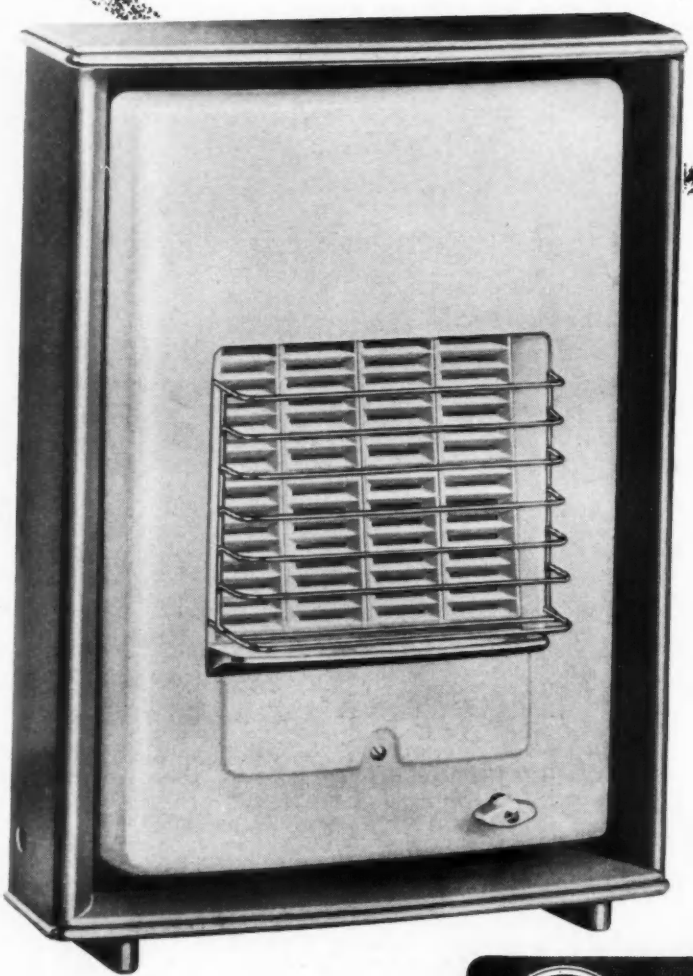

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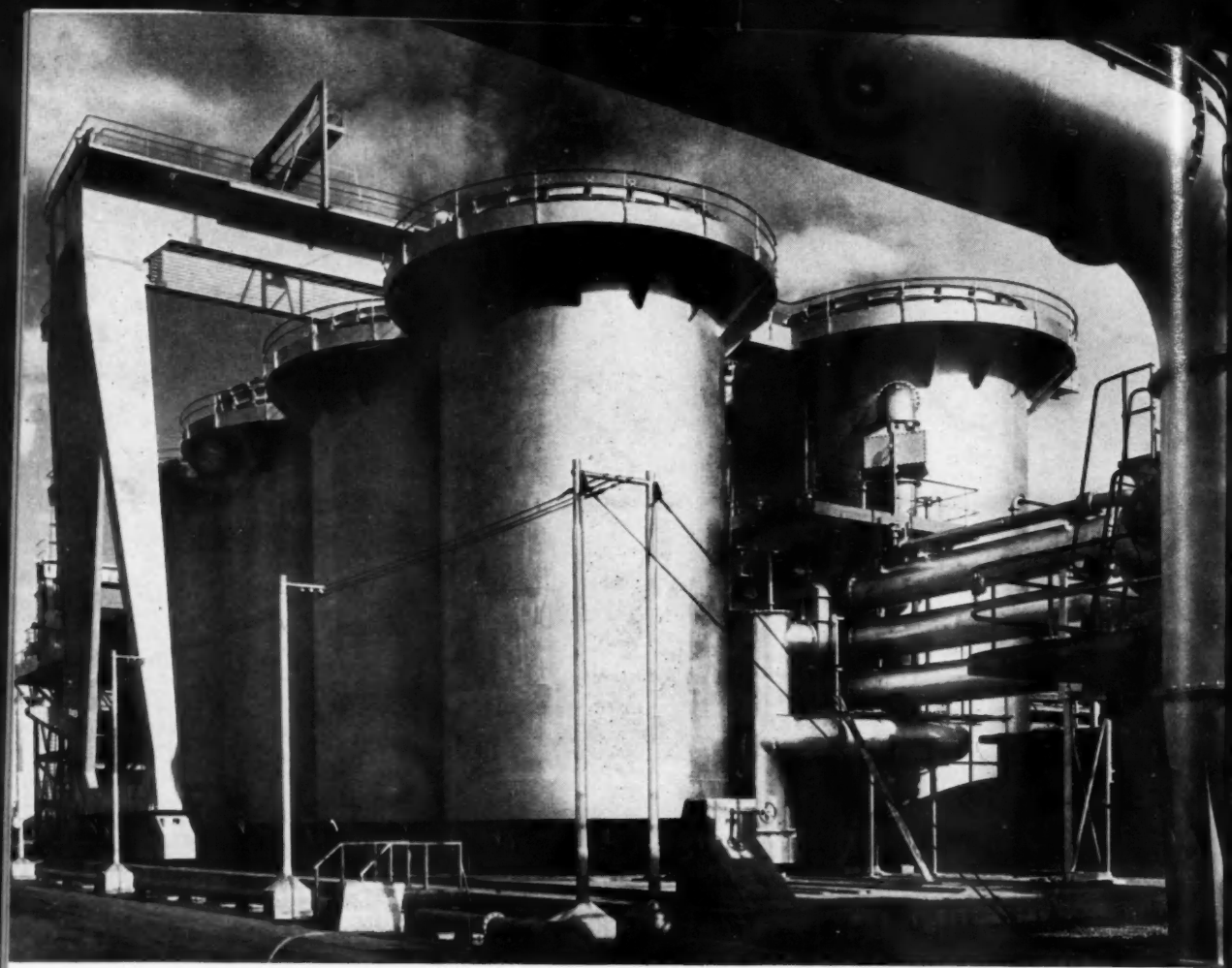

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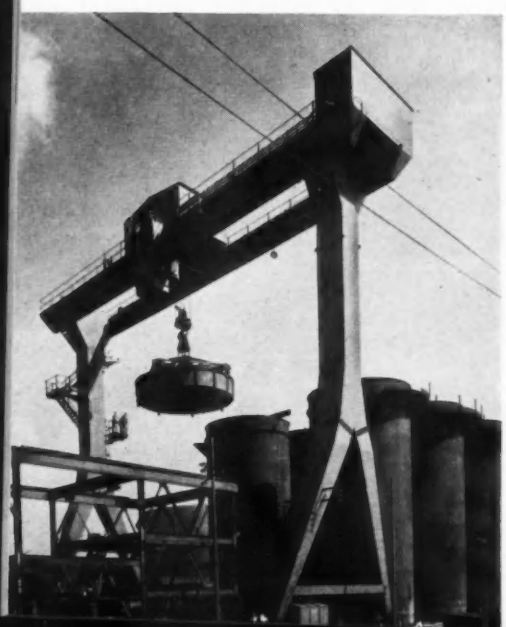

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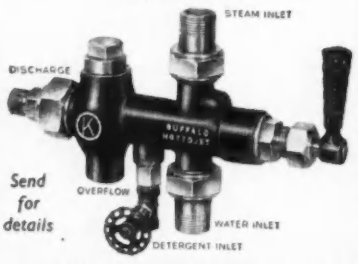

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K. L. PEARCE,
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East Midlands Gas Board,
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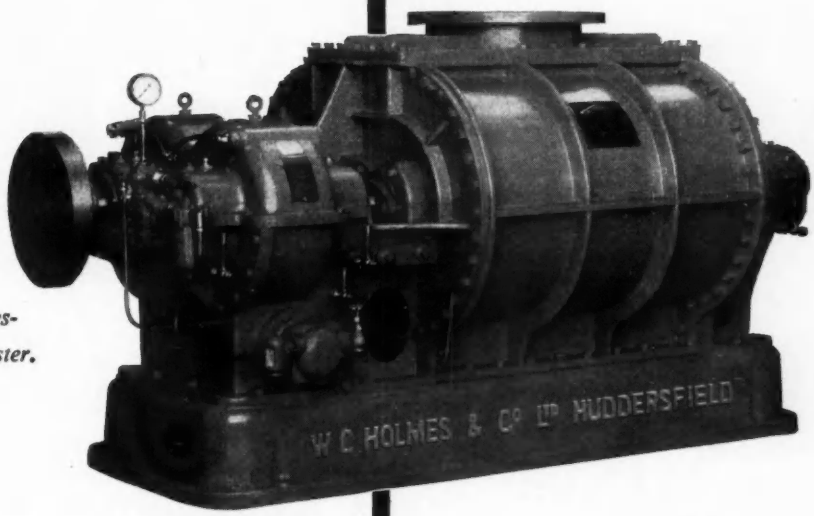

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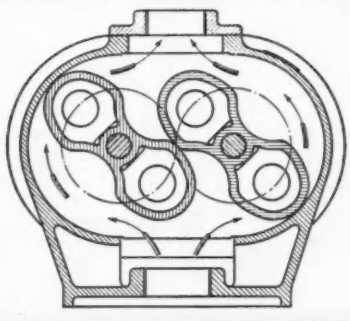

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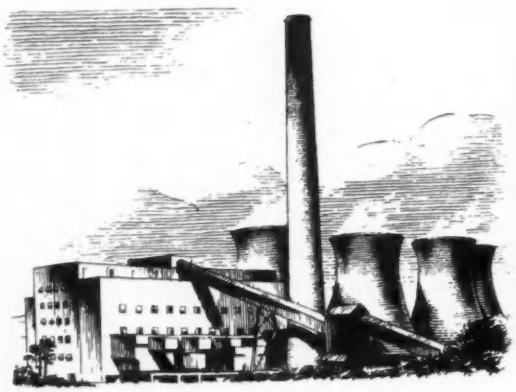

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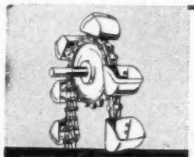

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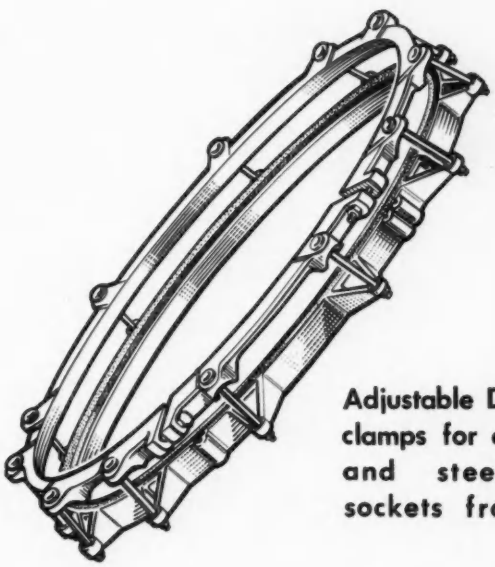

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Everything you've heard about AROMATICS is suddenly, powerfully true!

PERHAPS, in the first place, you try Super National Benzole almost by chance. You like the look of the garage, and you remember reading something about Aromatics. 'Let's see', you say to yourself, 'if there's anything in it'. So you fill up, and drive away. And, just for the moment, you think no more about it. Fifty miles of crowded, stop-start motoring go by. Fifty miles that normally are a particular trial. But this time, curiously enough, fifty *pleasant* miles—for your car is running rather remarkably well. Next day, maybe, you have the chance of a run across country—and deliberately you set out to see what your car, in its new mood, can do.

Within minutes of starting up, you realise that everything you've heard about Aromatics is true—powerfully true. Super National Benzole has given you a smoother, more positive drive-off, more power underfoot and, as you discover at journey's end, definitely more miles per gallon.

And because you are an intelligent motorist, you want to know why.

Why does Super National Benzole give you a more positive drive-off? Answer: AROMATICS—the exceptional volatility of the Aromatics in motor benzole. Because these Aromatics change into vapour rapidly, your engine warms up fast from cold. Instead of a slow, jerky start, you enjoy a clean, positive drive-off. (And because you use your choke less, you cut down wear on your engine *and* save fuel!)

Why does Super National Benzole give you more power underfoot? Answer: AROMATICS—their volatility *and* their high knock-resistance. Because motor benzole AROMATICS vaporise easily, they are more effectively atomised and every cylinder is more evenly filled with the correct fuel/air mixture—and every piston delivers its maximum power.

And, so long as your ignition is right, an engine running on Super National Benzole won't knock when you accelerate, even if it's a high-compression engine. Indeed, high-compression engines *need* Aromatics precisely for their knock-resistance.

Why does Super National Benzole give you more m.p.g? Answer: AROMATICS. The energy in the petrol derives from the hydrocarbons which form it. The aromatic hydrocarbons are chemically more compact than other types of hydrocarbons. The result is that every gallon of Super National Benzole packs more energy—and therefore gives you more miles per gallon.

If you do a good deal of town driving with its inevitable low-gear manoeuvring—or if you drive longish distances—every extra ounce of energy that you get out of Super National Benzole means money saved.

The Benzole Bonus These benefits are the Benzole Bonus. Positive benefits that can quickly be put to the test by an intelligent motorist. (And such a motorist will not be content until he *has* put them to the test.)

This week try a tankful of Super National Benzole. At the end of the week, ask yourself if Super National Benzole—top grade petrol plus Aromatics—is not the most go-ahead fuel you have ever bought.

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National

People going places →

GO SUPER NATIONAL BENZOLE

THE HIGH OCTANE/HIGH AROMATIC MIXTURE